

# **EXHIBIT 4**

**In the Matter Of:**

*Oklahoma Farm Bureau Mutual Ins Co As Subrogee of Michael Diel vs*

*OMEGA Flex*

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*JOHNIE SPRUIELL*

*May 12, 2023*

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1	Volume 1 Pages: 1-97 Exhibits: 5 UNITED STATES DISTRICT COURT WESTERN DISTRICT OF OKLAHOMA : OKLAHOMA FARM BUREAU MUTUAL INSURANCE : CASE NO. CIV-22-18-D COMPANY AS SUBROGEE OF MICHAEL DIEI, : Plaintiffs : vs. : OMEGA FLEX, INC., : Defendant : : ZOOM VIDEO DEPOSITION OF: JOHNIE P. SPRUIELL, P.E. Appearing remotely from Sanger, Texas Friday, May 12, 2023 9:00 a.m. - 12:09 p.m. (CST) Christine E. Borrelli, CSR, RPR, RMR LEXITAS LEGAL (508) 478-9795 - (508) 478-0595 (Fax) www.LexitasLegal.com	3	I N D E X WITNESS DIRECT CROSS REDIRECT RECROSS JOHNIE P. SPRUIELL, P.E. By Mr. Masin 5 EXHIBIT PAGE: Exhibit 1, Notice of Deposition ..... 9 Exhibit 2, Curriculum Vitae ..... 15 Exhibit 3, Testimony List ..... 22 Exhibit 4, Report, 3/3/23 ..... 34 Exhibit 5, 2014 Paper ..... 72 Exhibits digitally marked and returned to counsel with transcript.
2	**Counsel, witness, and court reporter appearing remotely** APPEARANCES: ATTORNEYS FOR THE PLAINTIFF: CATHCART & DOOLEY 2807 Classen Boulevard Oklahoma City, OK 73106 (405) 524-1110 BY: W.R. CATHCART, ESQ. bcathcart@cathcartdooley.com ATTORNEYS FOR DEFENDANT OMEGA FLEX, INC.: GORDON & REES, LLP 95 Glastonbury Boulevard - Suite 206 Glastonbury, CT 06033 (860) 494-7542 BY: ADAM MASIN, ESQ. amasin@grsm.com In Attendance: Myra Thetford, Lexitas videographer Todd DeSmet, Oklahoma Farm Bureau	4	VIDEOGRAPHER: We are now on the record. Today is May 12, 2023, and the time is 9:00 a.m., Central Standard Time. This is the videotaped deposition of Johnie Spruiell in the matter of Oklahoma Farm Bureau Mutual Insurance Company as Subrogee of Michael DieI versus Omega Flex, Inc, filed in the U.S. District Court, Western District of Oklahoma. Case Number CIV-22-18-D. This deposition is taking place via web videoconference with all participants attending remotely. My name is Myra Thetford. I'm the videographer representing Lexitas. Would counsel on the conference please identify yourselves and state whom you represent beginning with the questioning attorney? MR. MASIN: This is Adam Masin from Gordon Rees on behalf of Omega Flex, Inc. MR. CATHCART: Bill Cathcart on behalf of Oklahoma Farm Bureau Mutual Insurance Company. VIDEOGRAPHER: Our court reporter today is Christine Borrelli representing Lexitas. The court reporter will now swear in the witness. JOHNIE P. SPRUIELL, P.E., having first been identified by the production of a driver's license, was duly sworn and testifies as follows:

<p>5</p> <p>1 DIRECT EXAMINATION BY MR. MASIN:</p> <p>2</p> <p>3 Q. Good morning, Mr. Spruiell. My name is Adam Masin,</p> <p>4 and I represent Omega Flex. I wanted to just begin by saying</p> <p>5 that my colleague, Mr. Guilmartin, sends his regards.</p> <p>6 A. I appreciate that. Did you say your name is Adam?</p> <p>7 Q. Yes. Masin, yes.</p> <p>8 A. Nice to meet you, Adam.</p> <p>9 Q. You and I haven't had the opportunity to speak</p> <p>10 before, but I look forward to talking to you a little bit</p> <p>11 today. One thing that I want to say right off the bat is I do</p> <p>12 have a little bit of a cold, so if for some reason you can't</p> <p>13 hear me, if I'm coughing too much, or something like that,</p> <p>14 then please forgive me. I'll try to repeat my questions or</p> <p>15 ask you a different question, but let me know if, for some</p> <p>16 reason, that becomes an issue. Okay?</p> <p>17 A. Surely, surely. Sorry you're having that problem,</p> <p>18 that can be trying when you're --</p> <p>19 Q. That's okay.</p> <p>20 A. -- trying to do depositions and such.</p> <p>21 Q. It's not too bad. It's just a little itch in my</p> <p>22 throat, which is a bit of an issue. So, you have been deposed</p> <p>23 before, I know that. So I know you're probably familiar with</p> <p>24 some of the basic ground rules, but I'll just go through them</p> <p>25 with you again. Number one, of course, these days is since we</p>	<p>7</p> <p>1 fellow engineers may come in a little bit while we're -- I</p> <p>2 like being at my desk for depositions when possible. And the</p> <p>3 fellow that will come in might be Sean Thompson. He's not</p> <p>4 affiliated or associated with this case, but he's an Integrity</p> <p>5 colleague, but he knows nothing of this case or has no input</p> <p>6 or interest.</p> <p>7 Q. Okay, thank you. You have your computer screen,</p> <p>8 obviously, open. Is there anything else open on your screen</p> <p>9 other than this Zoom call?</p> <p>10 A. Yes. I have Microsoft Outlook open, which I really</p> <p>11 don't need, I guess, at this point.</p> <p>12 Q. I'm just going ask that you minimize anything that</p> <p>13 is not related to the deposition.</p> <p>14 A. Oh, yes, I'll be -- I'll certainly do that.</p> <p>15 Q. Thank you.</p> <p>16 A. No doubt about it. I do have a folder that's got --</p> <p>17 what I did was I poked around in the main file folder, that is</p> <p>18 our job folder that's on our server, for various documents</p> <p>19 like our report on this matter and Dr. Buc's report and a</p> <p>20 paper or two that have come out of here. And I made copies of</p> <p>21 them and put them in this file folder on my desktop so that I</p> <p>22 can refer to them. I'm just anticipating what I might need to</p> <p>23 refer to.</p> <p>24 Q. Okay.</p> <p>25 A. There's nothing that says that I definitely will --</p>
<p>6</p> <p>1 are doing this on Zoom, if for some reason there is any issue</p> <p>2 with your technology, if your screen freezes, if you can't</p> <p>3 hear me, you can't see me, if my screen looks like it's</p> <p>4 frozen, something like that, you know, wave your hands, jump</p> <p>5 up and down, do whatever you need to do to let us know so that</p> <p>6 we don't waste time asking questions or, you know, having</p> <p>7 technological issues. Okay?</p> <p>8 A. Surely. That will be fine.</p> <p>9 Q. Okay. So far so good in that regard, I think;</p> <p>10 right?</p> <p>11 A. Yes, sir.</p> <p>12 Q. Okay. If for some reason you don't understand one</p> <p>13 of my questions, let me know, and I'll ask you a different</p> <p>14 question. If you answer my question, I'm going to assume that</p> <p>15 you understood the question; is that fair?</p> <p>16 A. Yeah, that is fair, yes.</p> <p>17 Q. Okay. If you need to take a break for any reason --</p> <p>18 we will take breaks from time to time, but just let us know</p> <p>19 that you need to take a break, and we little take a break as</p> <p>20 long as a question isn't pending. Fair?</p> <p>21 A. Sure, that will be fine.</p> <p>22 Q. Okay. And where are you sitting today?</p> <p>23 A. I'm in Integrity's offices in Sanger, Texas.</p> <p>24 Q. Okay. Is anybody in the room there with you?</p> <p>25 A. No. Apparently, I'm by myself. I think one of my</p>	<p>8</p> <p>1 Q. Got it.</p> <p>2 A. -- except when I'm looking at it.</p> <p>3 Q. That's fair. Thank you for telling me that. One of</p> <p>4 the things that we will go -- we will be doing today is I'll</p> <p>5 be showing you some documents on your screen. If I show you a</p> <p>6 document on your screen, you can look at the document that is</p> <p>7 on the screen, if you have another copy of it, whether it's a</p> <p>8 hard copy or something else, you can look at that. That's</p> <p>9 fine. If for some reason you can't see the document or you</p> <p>10 need me to blow it up or something like that, then just let me</p> <p>11 know, and we'll do that. Okay?</p> <p>12 A. That's great. I sure well.</p> <p>13 Q. Do you have any hard copy documents in front of you,</p> <p>14 paper copy documents, of anything?</p> <p>15 A. In this modern age, I absolutely don't for a change.</p> <p>16 Q. Yeah, they talked about the paperless office like 20</p> <p>17 years ago, and I'm not sure that's ever quite happened, but</p> <p>18 maybe we're getting there. Videotaped depositions didn't</p> <p>19 happen 20 years ago, I don't think, anyway.</p> <p>20 A. Right.</p> <p>21 Q. So --</p> <p>22 A. Well, it may have started by then.</p> <p>23 Q. So I'm going to show you a document now. It will be</p> <p>24 the first one that we look at today. We will mark it as</p> <p>25 Exhibit 1.</p>

<p>9</p> <p>1 (Exhibit 1, Notice of Deposition, marked for 2 identification) 3 4 Q. (By Mr. Masin) It's Defendant Omega Flex, Inc.'s 5 Notice of Videotaped Deposition of Johnie P. Spruiell. Do you 6 see this document? 7 A. I do, in fact. 8 Q. Okay. And have you ever seen this before? 9 A. Yes. 10 Q. Okay. And I'm going to scroll through. It asks you 11 on page 1, it says, "The deponent is required to produce to 12 counsel of record the materials identified on the attached 13 Schedule A within five days of the deposition." Do you see 14 that? 15 A. Yes, sir, I do. 16 Q. Okay. And then there is a Schedule A and a request 17 for production of documents, which has eight enumerated 18 requests. Have you read through those? 19 A. I have. It's been a little while, but yes. 20 Q. Okay. And as a result of reading these requests, 21 did you provide anything to your counsel? 22 A. I believe that we have provided everything that's 23 been requested. 24 Q. Okay. Now I know that there's some documents that 25 we requested that you haven't had the opportunity to -- we</p>	<p>11</p> <p>1 Q. And you would have produced those time sheets to 2 Kelly in this case, and then -- 3 A. Well, no. It would have been to our lady that does 4 bookkeeping. 5 Q. Got it. And what is the name of that person? 6 A. Her name is Annette Fuhrmann, F-U-H-R-M-A-N-N, I 7 believe -- 8 Q. Okay. 9 A. -- if you need the spelling. 10 Q. Okay, got it. Since you issued your report in this 11 case, have you reviewed any new documents that bear on any of 12 the opinions that you intend to give at trial? 13 A. I have seen nothing new. I mean, I have seen no new 14 documents since I reviewed our report. 15 Q. Are you aware that Omega Flex has produced some 16 expert reports in this case? 17 A. Yes. 18 Q. Okay. And one of those was produced by Exponent to 19 Morse. Have you read that report? 20 A. I have not. 21 Q. Okay. Have you read a report by David Smith? 22 A. No. 23 Q. Have you read a report by Nathan Dorris? 24 A. No. 25 Q. Have you read a report by David Abraham?</p>
<p>10</p> <p>1 requested them before the deposition. I know you haven't had 2 an opportunity to get ahold of all of those yet. But other 3 than that, you think you produced everything that you have in 4 your file. Correct? 5 A. I think so. 6 Q. Okay. Have you produced all of your billing records 7 related to this matter? 8 A. I don't know. I'm not the prime engineer on this 9 job, so I'm not really in that loop. I assume that if you 10 asked for them, we produced them because we're -- well, 11 frankly, we're pretty diligent about all that. 12 Q. Okay. Are you the one who would be typically 13 responsible for producing billing records relating to the work 14 that you yourself did, or is it just sort of one lump, you 15 know, production of an invoice from Integrity in general? 16 A. No. The primary responsibility for billing, for 17 billing the job, billing the file, the case, falls on the 18 engineer who is -- actually, whose number is coded in the job 19 number, and I think it may be Kelly in this case. It's 20 probably Kelly or Mark. 21 Q. Okay. 22 A. And I'm just an assistant in that case, and my 23 responsibilities are just to make sure that my -- when I do 24 some work, that my time sheets are filled out timely so that 25 they can get posted to the receivables for that job.</p>	<p>12</p> <p>1 A. No. 2 Q. Okay. Do you have any plans to issue an additional 3 report in this case? 4 A. I have no personal or professional plans to do so. 5 If we were requested to produce an additional report, perhaps 6 covering additional issues, then, obviously, we will comply. 7 We would produce a report. 8 Q. Okay. One of the things that I should have 9 mentioned earlier is that during the course of our 10 conversation today, I don't want you to reveal any 11 communications that you may have had with Mr. Cathcart or any 12 other attorney. So all of my questions will -- if I ask you a 13 question that asks you if you have spoken about something or 14 to someone, please don't reveal any of those communications; 15 is that fair? 16 A. That's fair. 17 Q. So have you become aware or are you aware of what 18 Omega Flex's experts have opined with regard to the cause of 19 the fire in this case? 20 A. I am not. 21 Q. Okay. You mentioned that you have Ms. Buc's, or 22 Dr. Buc's report. Have you read Dr. Buc's report? 23 A. Not thoroughly, not completely. I was primarily 24 interested in examining her photographs of the CSST arc site, 25 or the arc sites on the CSST, and seeing what she said about</p>

<p>13</p> <p>1 that.</p> <p>2 Q. Okay. Have you read Mr. Ozment's report?</p> <p>3 A. I have not.</p> <p>4 Q. Have you ever spoken with Mr. Ozment?</p> <p>5 A. If so, it's been years.</p> <p>6 Q. Okay.</p> <p>7 A. What I'm saying is I don't believe so, but Curtis'</p> <p>8 name was familiar to me when I saw this file pop up. And I</p> <p>9 think there is a good chance that at some time or another I</p> <p>10 have spoken with him, but not about this case.</p> <p>11 Q. Okay. Have you read -- well, you haven't attended</p> <p>12 any depositions in this case so far, have you?</p> <p>13 A. I have not.</p> <p>14 Q. Have you read any transcripts, deposition</p> <p>15 transcripts, in this case?</p> <p>16 A. No.</p> <p>17 Q. Okay. And just so we're clear, were you aware that</p> <p>18 Mr. Colwell was deposed?</p> <p>19 A. Oh, yes, yes, I do --</p> <p>20 Q. And you have not read his transcript; correct?</p> <p>21 A. I have not.</p> <p>22 Q. Okay. Were you aware that Mr. Hergenrether was</p> <p>23 deposed?</p> <p>24 A. Correct, yes.</p> <p>25 Q. And you have not read his transcript yet; correct?</p>	<p>15</p> <p>1 A. That's correct.</p> <p>2 Q. Have you ever worked with Mr. Ozment before this</p> <p>3 case?</p> <p>4 A. Well, that's what I was saying earlier is that his</p> <p>5 name is very familiar, and I have been in this business a long</p> <p>6 time, and I have met a lot of folks, and his name is familiar.</p> <p>7 I think that we might have worked together at one time or</p> <p>8 another, or at least knew each other at one time or another.</p> <p>9 But I don't have an independent recollection of it. I just</p> <p>10 think it's likely because his name sounds so familiar to me.</p> <p>11 Q. Okay. Did you ever email with him, or any other</p> <p>12 form of communication, other than verbal?</p> <p>13 A. If I emailed Curtis, it would have been because he</p> <p>14 was a carbon copy recipient to something I -- to an email that</p> <p>15 I was replying all to, but I sent no emails that were directed</p> <p>16 specifically at him.</p> <p>17 Q. I'm going to show you what we will mark as</p> <p>18 Exhibit 2.</p> <p>19</p> <p>20 (Exhibit 2, Curriculum Vitae, marked for</p> <p>21 identification)</p> <p>22</p> <p>23 Q. (By Mr. Masin) Can you see this on your screen?</p> <p>24 A. I do.</p> <p>25 Q. And do you recognize this document?</p>
<p>14</p> <p>1 A. No, I have not.</p> <p>2 Q. And I don't even think there is a transcript</p> <p>3 available yet for Mr. Ozment, but are you generally aware of</p> <p>4 what he testified to, or not?</p> <p>5 A. I am.</p> <p>6 Q. Okay.</p> <p>7 A. Our report alludes to it, of course. Our report</p> <p>8 alludes to some things that Mr. Ozment holds as his opinion.</p> <p>9 Q. No, I understand that. But his deposition was</p> <p>10 earlier this week, and I just want to be clear in my question.</p> <p>11 Are you aware as to what he testified to during his</p> <p>12 deposition?</p> <p>13 A. I'm sorry. You said testified to, and I was more</p> <p>14 answering the question of what he's offered as his opinion via</p> <p>15 a report and probably speaking of Kelly and Mark. I am not</p> <p>16 aware of what testimony he provided and how that may or may</p> <p>17 not be the same as what was the extent period or previously.</p> <p>18 I don't know.</p> <p>19 Q. And Dr. Buc was deposed yesterday. Are you aware as</p> <p>20 to what her testimony was?</p> <p>21 A. No.</p> <p>22 Q. No, okay. And I take it that is because you're not</p> <p>23 aware of their testimony, that you haven't discussed their</p> <p>24 testimony with Mr. Colwell, with Mr. Hergenrether, with</p> <p>25 Dr. Buc or Mr. Ozment; correct?</p>	<p>16</p> <p>1 A. Yes, sir.</p> <p>2 Q. Okay. What is it?</p> <p>3 A. Well, that's my CV.</p> <p>4 Q. All right. I don't see -- let me see. I don't see</p> <p>5 a date on this. Do you know when the last time you updated</p> <p>6 this was?</p> <p>7 A. I can tell you if you want to know.</p> <p>8 Q. Sure, I would like to know.</p> <p>9 A. How do I -- well, I can't take control of my screen.</p> <p>10 What do I have to do to --</p> <p>11 Q. Well, I don't want you messing around, but do you</p> <p>12 remember when the -- do you remember approximately when the</p> <p>13 last time you updated it was?</p> <p>14 A. Well, I'm sure it's been better than a year or so.</p> <p>15 I have to address this problem, though, because surely at some</p> <p>16 point you're going to ask me a question, and I'm going to need</p> <p>17 to refer to those documents in my computer.</p> <p>18 Q. Well, but hopefully --</p> <p>19 A. But hopefully that pops up, if you want to, that's</p> <p>20 fine.</p> <p>21 Q. Yeah. I mean, hopefully, I'll show you whatever --</p> <p>22 A. That's fair enough.</p> <p>23 Q. -- we need to refer to, but if for some reason there</p> <p>24 is a document that you want to refer to, then we can address</p> <p>25 that. So you can see the CV on your screen. Is there</p>

<p>17</p> <p>1 anything that you would have put on your CV in your last year 2 that you don't believe is here? 3 A. No, no, I can't think of anything new or special or 4 nothing like that. 5 Q. Okay. So your licenses that are listed here are 6 accurate; correct? There is no new licenses? 7 A. Correct. 8 Q. Okay. And your education, you have a BSME from the 9 University of Texas at Arlington, 1978? 10 A. Correct. 11 Q. And there is no other -- have you taken any -- 12 strike that. Have you taken any classes that have resulted in 13 any further degrees or certifications of any kind? 14 A. I have not. 15 Q. Okay. Are your affiliations still up to date? Are 16 they accurate? 17 A. They are. 18 Q. Okay. Is there anything in your job experience that 19 needs to be updated? 20 A. No, no. The most recent job indicated is Integrity, 21 and, of course, I'm still here. 22 Q. Okay. And you have three publications that are 23 listed here. 24 A. Correct. 25 Q. And it appears as if these three publications were</p>	<p>19</p> <p>1 believe there's things that you must put in and -- gosh, I'm 2 just floundering here. It's been years, literally, since I've 3 read their requirements. Anyway, of course, there is a panel 4 of ISFI folks. I guess they're all NAFI members, National 5 Academy of Fire Investigators -- or Association of Fire 6 Investigators, and they review the papers. That's the peer 7 review. And they are, by and large, your peers. They are all 8 folks that belong to the same organization that you do. 9 Q. So is it your testimony that these papers were peer 10 reviewed before they were put into this compendium of 11 articles? 12 A. Yes. 13 Q. Do you know what the process for peer review 14 entailed? 15 A. I don't know. It's -- I just know it's something 16 that's done. I have never been associated with the doing of 17 it. 18 Q. Okay. 19 A. I have not served as a reviewer for ISFI/NAFI in any 20 of this. 21 Q. Okay. Are there any publications that are missing 22 from this list? 23 A. By which you mean publications that I have made? 24 Q. Yeah. Have you been the author or coauthor of any 25 publications since September of 2018 that you would put on</p>
<p>18</p> <p>1 related to the International Symposium of Fire Investigations 2 Science &amp; Technology. Do you see that? 3 A. They were papers presented at various I-S-F-I, ISFI 4 symposia. 5 Q. Okay. Were these papers published somewhere? 6 A. There is a journal, or whatever -- I'm not quite 7 sure what they call it. There is a big book that ISFI 8 compiles from the papers that are presented. And as an 9 attendee, I believe that you get one, or maybe you have to pay 10 for it, I'm not sure. But, yeah, there's a journal or 11 something like a journal, a volume of collecting the papers 12 that are presented at each of the symposia. 13 Q. Do you know what the requirements of symposia are 14 for submitting papers? 15 A. Yeah. It's been a while, but they have got a big, 16 long list of things that you're supposed to do. 17 Q. Do you know whether -- 18 A. I'm sorry. 19 Q. Sorry. Please, I don't mean to interrupt you, but 20 please finish your answer. 21 A. No, I was just going to say some of them are -- deal 22 with, you know, editorial things or -- well, the tone and 23 type, I don't have my -- I'm confusing my words this morning. 24 But the tone and the grammar and all of that that you're 25 supposed to use for the papers, and then there are -- I</p>	<p>20</p> <p>1 your CV? 2 A. No. I have done a lot of report -- internal report 3 review here, and a lot of -- well, if you could even see, copy 4 editing, some of that. But there are no publications of the 5 sort listed here on any topic that I can think of that I have 6 released in that time period. 7 Q. Okay. 8 A. "That time period" being, I guess, since September 9 2014. That's the oldest publication of the three that are 10 listed there. 11 Q. Have you ever had any training on installation of 12 CSST? 13 A. I have not attended any training classes or anything 14 of that nature. 15 Q. Okay. And you haven't been certified to install 16 CSST; correct? 17 A. I'm not a certified installer, no. 18 Q. Do the publications that are listed here encompass 19 all of the research that you have done that you believe has 20 been peer reviewed? 21 A. Could you put that a different way, Adam? I'm not 22 quite sure I understand what you're trying say. 23 Q. Sure. Other than the publications that you have 24 listed here, have you done any other research that has been 25 peer reviewed or published?</p>



<p>21</p> <p>1 A. I have done research and analysis on CSST and 2 lightning-caused hole in CSST and fuel gas escaping from CSST, 3 et cetera. That has been performed in conjunction with me 4 doing engineering assignments and writing reports, but I have 5 not taken any of that kind of research and information and 6 published a paper of the sort that is listed here in my CV. 7 Q. Right. And you have done work in other litigations 8 involving CSST; correct? 9 A. Yes. 10 Q. Okay. I'm not talking about that work. So 11 excluding any work that you have done in a litigation context, 12 the publications that are listed on your CV are the ones where 13 they have involved research involving CSST and lightning 14 strikes; correct? 15 A. I'm not sure I understood that. Why don't you hit 16 me again. 17 Q. Sure. Outside of the litigation context, the only 18 research that you have had published relating to CSST and 19 lightning strikes are the publications that are listed on your 20 CV; correct? 21 A. I believe that's correct. 22 Q. Okay. Thank you. 23 A. Incidentally, whatever you just did, I'm back to the 24 screen that we originally started with. 25 Q. Okay.</p>	<p>23</p> <p>1 that's more recent than November 23, 2021? 2 A. Yes. Yes, there is. 3 Q. But -- 4 A. There is an additional case. 5 Q. What case is that? 6 A. All I can remember is that it's Block residence, and 7 I think it's -- I think it's CSST. I'm not 100 percent sure. 8 Let me just find it. I've got it handy. 9 Q. Is that something -- 10 A. It's not a hard job to get to it in my computer. 11 Q. Okay. Was that a case involving Omega Flex, or no? 12 A. I don't remember. 13 Q. You don't remember, okay. But you could look it up 14 pretty quickly? 15 A. Very quickly. 16 Q. All right. So I would have to take the screen down 17 in order for you to do that; is that right? 18 A. Yes, whatever you did a while ago. 19 Q. Let's see -- 20 A. There you go. 21 Q. Let's just do that so you can do that -- 22 A. Get me back to the right spot. Okay. 23 Q. -- so we don't delay things. 24 A. It is Omega Flex, and it is CSST. 25 Q. Okay. What case was that?</p>
<p>22</p> <p>1 A. If you put it back to this screen as it's now shown 2 to me, I will be able to access those documents on my 3 computer. 4 Q. If for some reason you need to look at something 5 that I'm not showing you, just let me know, and we will figure 6 that out. Okay? 7 A. There you go. 8 Q. All right. So I'm going to show you what we will 9 now mark as Exhibit 3. 10 11 (Exhibit 3, Testimony List, marked for 12 identification) 13 14 Q. (By Mr. Masin) Do you recognize this document? 15 A. Yes, sir. That's my deposition and trial list. 16 Q. Okay. So it appears as if the most recent case that 17 you have listed here is the De La Rosa case. Do you see that? 18 A. Yeah. Adam, I see it, but that's not accurate. I'm 19 sorry. We must have shipped you -- I think that's one 20 deposition behind. 21 Q. Okay. 22 A. I must have accidentally shipped you an older 23 edition. 24 Q. And that was going to be my question. Is there 25 anything that you have been involved in as an expert witness</p>	<p>24</p> <p>1 A. That is Privileged Underwriters Reciprocal Exchange, 2 Block residence in paren -- I'm sorry, (Block residence), 3 Plaintiff, versus Omega Flex, Inc., Defendant. 4 Q. And where is that case located? 5 A. In the District Court, Smith County, Texas, 114th 6 Judicial District, Cause Number 21-0959-B, as in biker. 7 Q. Did you give a deposition in that case? 8 A. I did. 9 Q. When was the deposition? 10 A. That was on the 15th of February this year. 11 Q. Okay. Are there any other cases in which you have 12 been involved as an expert since November 23, 2021, other than 13 the one you just mentioned? 14 A. That I have been involved in as an expert? 15 Q. Correct. 16 A. A bunch of them. 17 Q. Okay. Have there been -- have you been retained in 18 cases that involve Omega Flex since November 23, 2021 in which 19 you have not yet given a deposition? 20 A. I'm going to say probably, yes. It would be in the 21 kind of role that I'm serving here where I'm really -- I'm not 22 the prime engineer on the file, or prime investigator -- you 23 know, prime analyst, let's say. I'm just doing some of the 24 little bits and pieces and helping out. 25 Q. Okay. And those are cases since November of 2021?</p>



<p>25</p> <p>1 A. Yes, that's been a long time. I'm sure -- I mean, 2 there's no doubt about it. I worked on some. Frankly, I have 3 had some health trouble in the last year, year and a half, so 4 I have not worked as much or spent as much time on case work 5 as would normally be the case, but -- you know, that's many 6 months. I have worked on a number of files, job files, job 7 assignments, since November of '21. 8 Q. Do any of those cases involve Oklahoma Farm Bureau 9 other than this case? 10 A. I don't know. 11 Q. Okay. Do any of those cases involve TracPipe? 12 A. Involve what? 13 Q. Do any of those cases involve TracPipe? 14 A. Oh, possibly. 15 Q. Okay. Have you testified in court at all since 16 November of 2021? 17 A. Okay. Toggle that screen again, and -- I'm already 18 open almost to the spot that -- oh, no. Wait a minute. This 19 would let me know if I testified at all. No, I have not, 20 sorry. 21 Q. Okay. 22 A. For some reason, I forgot momentarily that this 23 document has both court and deposition testimony. 24 Q. The De La Rosa case, you said the purpose of your 25 work there was to determine the cause of the gas explosion?</p>	<p>27</p> <p>1 Q. Yeah, sorry. 2 A. Oh, I see 3 February something. 3 Q. Right. The last deposition that you gave was just 4 after that, then; right? 5 A. It says "3 February" -- say again, Adam. 6 Q. The deposition that you just gave in that prior 7 Omega Flex case, that would have been after February 3, 2023? 8 A. Oh, yes, I guess it was, wasn't it? 9 Q. Okay. 10 A. I didn't get my original. 11 Q. That's why it's not on here. 12 A. Yeah. 13 Q. Okay. I'm just checking. 14 A. I'm sorry. 15 Q. In the last year, can you estimate what percentage 16 of your time working with Integrity has been spent on cases 17 involving CSST? 18 A. I can't really give you a number, but as of -- oh, I 19 don't know, a couple -- as of a couple of weeks ago, it was 20 almost exclusively, so for the last two years or so. And now 21 all of a sudden, I've got three or four jobs on completely 22 different matters that have popped up. 23 Q. Okay. So almost 100 percent of your time in the 24 last two years with Integrity has been working on CSST cases; 25 is that fair?</p>
<p>26</p> <p>1 A. Yes. 2 Q. Did that case involve CSST? 3 A. It did not. 4 Q. Okay. What was the issue in that case? 5 A. There was a gas utility leak, natural gas utility 6 leak, in the alley. And the gas migrated from the alley 7 toward the house around disturbances in the soil, and those 8 disturbances are the sewer pipe and the gas line itself and 9 the water piping. 10 Q. Okay. 11 A. The soil was disturbed due to in-place piping. It 12 can stay slightly disturbed for decades, and so it was the 13 case in this. It serves as conduit for any pressurized leak 14 it had in the attic to migrate its way to a house or wherever 15 the offending gas lines are. 16 Q. Okay. I actually see at the bottom of the page 17 here, this was revised as of February 2022. But it sounds 18 like the other case you mentioned was just a little bit after 19 that, then; right? 20 A. February of 2023. Did I remember it do that? Whoa, 21 what happened here? 22 Q. So the Privileged Underwriters case that you 23 mentioned -- 24 A. I'm sorry, Adam. What were you just asking me? I 25 lost my screen momentarily.</p>	<p>28</p> <p>1 A. I don't know if almost 100 percent is how I would 2 characterize it, but a lot of it. Maybe 70, 80 percent, 3 something like that. 4 Q. Okay. 5 A. Until, as I say, the last few -- well, actually, the 6 last few days I did initial inspections and work on these 7 three or four files within the last several months. But all 8 of a sudden, within a couple or three days, all of them need a 9 report due in a month. You know how that goes sometimes. 10 Q. Are you working on any other cases with the Cathcart 11 firm? 12 A. I don't believe so. 13 Q. Okay. And you don't recall whether you're working 14 on any other cases with Oklahoma Farm Bureau; is that right? 15 A. I am unaware of any. 16 Q. Okay. Are you aware of what your rates are in this 17 case? 18 A. I think I'm billed at \$295 an hour, and then there's 19 \$100 additional fee for the deposition hours only. 20 Q. Do you know whether any invoices have been submitted 21 in this case for the work you have done? 22 A. Oh, I think this case has been going on for a long 23 time, so I have every expectation that invoices have been 24 submitted. 25 Q. Do you know whether the invoices have been paid to</p>

<p>29</p> <p>1 date?</p> <p>2 A. Do I know when and what?</p> <p>3 Q. Do you know whether the invoices that Integrity has</p> <p>4 submitted in this case have been paid?</p> <p>5 A. I would expect so, but I don't know.</p> <p>6 Q. Do you know what Integrity has -- strike that. Do</p> <p>7 you know the total amount that Integrity has invoiced on this</p> <p>8 case to date?</p> <p>9 A. I don't.</p> <p>10 Q. Who would know that?</p> <p>11 A. Annette Fuhrmann could tell you. That's the lady --</p> <p>12 she does our bookkeeping. It's possible that Kelly or Mark</p> <p>13 would know approximately off the top of their heads, but they</p> <p>14 might or might not, really.</p> <p>15 Q. Do you -- I'm guessing the answer is no, but I</p> <p>16 presume, do you know the total amount of money that Integrity</p> <p>17 has earned as being retained expert witnesses in CSST cases?</p> <p>18 A. No. You mean from all of the jobs that we have</p> <p>19 worked?</p> <p>20 Q. Yeah. Do you know?</p> <p>21 A. No, I have no idea.</p> <p>22 Q. Okay. Have you ever?</p> <p>23 A. Nobody here knows that.</p> <p>24 Q. Well, somebody would figure that out, I would</p> <p>25 imagine.</p>	<p>31</p> <p>1 A. Photographs and what's been described and laid out</p> <p>2 in our report, and that would be about it.</p> <p>3 Q. Okay. When is it that you became involved in this</p> <p>4 case?</p> <p>5 A. I don't know. I mean, I expect that there is a</p> <p>6 record on my time sheets somewhere. And my first work on the</p> <p>7 file, or at least my first billable work on the file would be</p> <p>8 reflected by that.</p> <p>9 Q. Okay. Do you recall being involved in this case in</p> <p>10 2020?</p> <p>11 A. In 2020?</p> <p>12 Q. Yeah.</p> <p>13 A. I don't know. I don't know when I did my work in</p> <p>14 this case. Again, I'm probably -- I may have spent several</p> <p>15 short periods of time working on the file spread out from 2020</p> <p>16 until now.</p> <p>17 Q. Right.</p> <p>18 A. But particularly with regard to the earlier work, I</p> <p>19 don't know what day or month or anything like that. I could</p> <p>20 probably dig it out, with a little trouble, out of my time</p> <p>21 sheets, but that's the only way I can find out, or figure it</p> <p>22 out.</p> <p>23 Q. So to the extent that you have done any work on this</p> <p>24 case, you would have recorded that in your time sheets;</p> <p>25 correct?</p>
<p>30</p> <p>1 A. Well, there's -- I'm sorry, there's a difference</p> <p>2 between figuring it out and knowing.</p> <p>3 Q. Yeah, yeah, of course.</p> <p>4 A. Yeah, okay, okay.</p> <p>5 Q. It involves math, which is beyond my pay grade.</p> <p>6 A. Right.</p> <p>7 Q. Have you ever been to the Diel's home?</p> <p>8 A. Have I been to what?</p> <p>9 Q. Have you ever been to the Diel's home?</p> <p>10 A. I must -- my audio may not be working quite right.</p> <p>11 Q. Sure.</p> <p>12 A. Adam, would you say it one more time?</p> <p>13 Q. Yeah. You're aware that this case involves a</p> <p>14 residence, the Diel's residence; correct?</p> <p>15 A. Oh, you said the Diel home.</p> <p>16 Q. Yeah.</p> <p>17 A. No, I have been to the job site. I have not been to</p> <p>18 the Diel residence.</p> <p>19 Q. Okay. And so you haven't been -- you weren't at</p> <p>20 either of the inspections that were done at the home on</p> <p>21 July 14th or July 30th; correct?</p> <p>22 A. I did not attend those, no.</p> <p>23 Q. Okay. Is it fair to say that any knowledge that you</p> <p>24 have relating to what the Diel home looked like would only</p> <p>25 come from photographs that you have seen?</p>	<p>32</p> <p>1 A. Yes.</p> <p>2 Q. Okay.</p> <p>3 A. Most work that I do will be recorded in my time</p> <p>4 sheets.</p> <p>5 Q. Okay.</p> <p>6 A. It's not perfectly accurate. Sometimes it will take</p> <p>7 me a little bit longer than I think it ought to have taken to</p> <p>8 get something completely finished. So I may do a couple hours</p> <p>9 work on Wednesday, put it in my time sheet, realize that there</p> <p>10 was one more thing that I needed to do on Friday and dash off</p> <p>11 that little piece of work but not even charge for it because I</p> <p>12 figure that I have already charged enough. Does that make</p> <p>13 sense?</p> <p>14 Q. Yes, it does. The time sheets are something that</p> <p>15 you keep in your regular course of business, right?</p> <p>16 A. I'm sorry?</p> <p>17 Q. The time sheets are something that you keep in your</p> <p>18 regular course of business; right?</p> <p>19 A. Yes, I do.</p> <p>20 Q. Okay. All right. Do you recall speaking with</p> <p>21 Mr. Colwell about his inspections of the home on July 14th or</p> <p>22 July 30 2020?</p> <p>23 A. I don't have an independent recollection of that.</p> <p>24 He and I speak about a number of jobs in the course of the</p> <p>25 year, and that's been, you know, three years ago.</p>

<p>33</p> <p>1 Q. What, if anything, did you do to prepare for your 2 deposition? And again, I'll remind you I'm not interested in 3 any communications that you may have had with counsel. 4 A. Off the top of my head, I reviewed our report, went 5 back and reviewed, or at least partially reviewed, my 6 testimony in the earlier case, Williams, which seems to have 7 some similarities, I guess; reviewed Kelly's photographs, and 8 Mark's, I believe; looked over Elizabeth Buc's report, 9 especially her photos and -- because she has nice, 10 high-resolution photos. I wanted to have a look at those, 11 photos of the CSST hole, arc hole, and -- oh, there's some 12 standards that -- some of which have been made into standards, 13 some of them are just advisory, LC-1, LC-1024, LC-1027. I 14 went back in my file and had a look at those. I was curious 15 about certain of the numbers that -- the amount of charge 16 transfer that various CSST-type products are supposed to be 17 able to withstand. Well, I may be missing one or two, or just 18 documents that are either in our file for this particular job 19 assignment, or they are in our great big comprehensive file of 20 CSST work that we've done, that we're aware of, that we have 21 been involved in, that other folks have done, you know, the 22 catch-all, everything related to CSST goes into that file on 23 the server, and so I poked around there for a while. 24 Q. Okay. I'm going to show you what we will mark as 25 Exhibit 4, I believe; right?</p>	<p>35</p> <p>1 the opinions that you felt were important to understanding the 2 cause of the fire at the Diel home; correct? 3 A. That's correct. 4 Q. You didn't leave out any opinions that you believed 5 were important to the understanding of the cause of the fire 6 in the Diel's home; correct? 7 A. That's correct. 8 Q. Okay. And you see there is a date on this report, 9 March 3, 2023, do you see that? 10 A. Yes, sir. 11 Q. And so did you review this entire report before it 12 was submitted on March 3, 2023? 13 A. Before it was submitted to Cathcart and Dooley? 14 Q. Yeah. 15 A. I don't know specifically, but I very often am the 16 final proofreader for our report. I would have probably read 17 the entire thing anyway, not just the little pieces that are 18 associated with my opinion. And I am very frequently the 19 final proofreader for the report. So I probably looked at it 20 as much as anybody, here. Even the ones that wrote it. 21 Q. Who wrote the report? 22 A. You know, I think it's an 04 -- no, it's an 03 job. 23 I think 03 is Mark, so -- 24 Q. When you say "it's an 03 job," what do you mean by 25 that?</p>
<p>34</p> <p>1 A. Is what now? 2 3 (Exhibit 4, Report, 3/3/23, marked for 4 identification) 5 6 Q. (By Mr. Masin) I'm going to show you what we will 7 mark as Exhibit 4. Do you recognize this document? 8 A. I do. 9 Q. And what is it? 10 A. That's our report on the Diel matter. 11 Q. Right. And does this report contain all of the 12 opinions that you intend to offer at trial in this case? 13 A. You know, that question always comes up, Adam, and 14 there's no good way to answer that. It's all of the opinions 15 that Mark, Kelly, and I thought covered the state of the case 16 as we know it, that is, the things that we know, the things 17 that we opine. But does it offer everything that we might 18 testify about at court? I don't know, and neither would the 19 other two boys, because we only answer what we're asked at 20 court, and that may or may not -- that question may or may not 21 be implicit in this report, so I don't know. I have no plans 22 to offer additional testimony, but if I am asked a question 23 that's within my ability to answer, I'll attempt to answer it 24 at court. 25 Q. Okay. And in preparing this report, you included</p>	<p>36</p> <p>1 A. Oh, I'm sorry. 2 Q. So you're looking at down here? 3 A. That's right, the Integrity engineering number. 4 That five-digit number, that's just the serial number of the 5 report, and then, of course, Diel, D-I-E, and then 03 is the 6 engineer, that's Mark Hergenrether. Tony Perryman is 02. 7 Kelly is 04. I am 06. Shawn is 05, I guess. 8 Q. So to you, this indicates that Mr. Hergenrether 9 would have been primarily responsible for writing the report? 10 A. I think that's likely, yes. 11 Q. Okay. Do you know whether there were drafts of the 12 report circulated before the final version? 13 A. I'm sure there were. 14 Q. Do you know whether those drafts were shared with 15 anyone outside of Integrity? 16 A. I don't know. 17 Q. Okay. On page 4 of the report, there is a list of 18 materials reviewed and information relied upon. Do you see 19 that? 20 A. Yes. 21 Q. Now, would you agree with me that not all of the 22 opinions that are expressed in this report are opinions that 23 you are intending to give at trial? 24 A. I didn't quite hear that, I guess. 25 Q. Sure. Would you agree that all of the opinions that</p>

<p>37</p> <p>1 are expressed in this report are not opinions that you intend 2 to give at trial? 3 A. That I intend to give at trial? 4 Q. Yeah. So let me just make that more clear for you. 5 So there appears to be -- 6 A. That's right. 7 Q. -- in the summary of opinions there appears to be 11 8 enumerated opinions. Do you see that? I'm sorry, more than 9 11. Let me try that again. In the summary of opinions, there 10 appears to be 13 enumerated opinions; correct? 11 A. That's correct. 12 Q. And your name is not listed on all of those; right? 13 A. That's correct. 14 Q. And so, for example, Number 10 lists Mr. Colwell but 15 does not list you; right? 16 A. In Number 10 that would be Mr. Colwell only. 17 Q. Okay. And when an opinion does not refer to you, 18 can I reasonably assume that that means you are not going to 19 be the witness who would provide the testimony that is 20 identified in that opinion? 21 A. Yes. That's a good assumption, Adam. 22 Q. Okay. So when we look at the "Materials Reviewed 23 and Information Relied Upon," which of these bullet points are 24 bullet points that you yourself reviewed and relied upon in 25 reaching the opinions that you intend to give at trial?</p>	<p>39</p> <p>1 on what others said about it, in this case, Kelly Colwell. 2 Q. Let me try it this way. Looking at page 4 and the 3 list that starts on page 4 -- 4 A. Uh-huh. 5 Q. -- is there anything or are there any bullet points 6 that are documents that you did not rely on that are not 7 within your area of expertise? And I'm talking about for 8 purposes of giving opinions in this case. 9 A. Right. Let me do that another way. For instance, 10 ASTM E1188, there is nothing about that standard -- nothing in 11 that standard relied -- nothing I'm going to testify about 12 relies on that standard. The same can be said for NFPA 70 of 13 the National Electrical Code. I'm not going to offer any 14 testimony regarding the NEC. NFPA 54, well, that may or may 15 not have something in it that I might rely upon. I'm just I'm 16 not sure right now. NFPA 54, formal interpretation, I don't 17 remember what that one is, so I'm not going to be relying on 18 it, probably. International Fuel Gas Code, I'm not sure what 19 is being -- what applicability it has to this case. I'm not 20 likely to be relying on it in my testimony. Omega Flex design 21 guide and installation, I'm not going to offer opinions 22 related to that. The STRIKENet report, as I say, to the 23 extent that I needed to, I relied on what my colleagues had to 24 say about that. 25 Q. Okay. Just before we get off this page then, you're</p>
<p>38</p> <p>1 A. Oh, gosh. We kind of hit on that earlier, and -- 2 let's see what we've got here. 3 Q. I can scroll through the list, but let me know when 4 you want me to keep scrolling. I'll blow it up a little bit 5 more. All right. So let me know when you're done with the 6 first page here. 7 A. Yeah, let's see. I'm just going to hit the ones 8 that I would have relied upon. Here's my problem, you know, 9 there are a lot of things that you learn, for instance, in the 10 review of -- having reviewed NFPA 921, you're going to rely on 11 that in some form or fashion from then on, sometimes 12 unconsciously. So I hate to say, well, I didn't really -- 13 yeah, I'm not going to list NFPA 921, and then later say, oh, 14 you didn't rely on 921? All right. I just -- yeah, of course 15 I do, just as a matter of course, because it's a basic 16 document from which people in my field learn, or -- that 17 people in my field have learned and then they, in effect, use 18 it the rest of their lives, I guess. But by the same token, 19 the same thing could be said for some of those ASTM standards 20 and NFPA standards, and they underlie my opinions in some 21 cases, but you don't rely on them in the specific work on a 22 job in the same way that you would rely on a STRIKENet report. 23 Q. Okay. 24 A. Although in that case, I had not reviewed the 25 STRIKENet report. I just relied, to what extent I needed to,</p>	<p>40</p> <p>1 not giving any opinions as to whether or not the Omega Flex 2 product at the Diel's home was or was not installed correctly; 3 correct? 4 A. That is correct, Adam. I will not be offering 5 testimony to that effect. 6 Q. All right. So if we go to the next page, again, if 7 it's easier, just let me know what in this list you are not 8 relying on in giving your opinions, if anything. 9 A. Yeah. I don't have any opinions related to the 10 Breckenridge Fire Department report, I believe. Some of my 11 opinions may be based on the scene examination notes and 12 photographs of Integrity folks. Same thing with the lab 13 examination and notes and photographs of Integrity folks. 14 Same thing with the lab x-rays and microscope images, 15 Integrity Forensics. Possibly I might need to rely on 16 Mr. Ozment's origin and cause report. I don't believe I have 17 seen the Oklahoma Farm Bureau photographs. I won't be relying 18 upon them. Metallurgical analysis by which -- I'm sure it 19 means report of Elizabeth Buc, I may rely to some degree on 20 that. No opinions based on Garfield County tax assessor 21 information or Google Earth view or gas regulator 22 specification sheet, or Michael Diel transcript, or Sondra 23 Diel transcript, deposition transcript. 24 I won't be basing any opinions on Integrity's 25 evidence list, sign-in sheet, new case information sheet or</p>



<p style="text-align: right;">41</p> <p>1 protocol for the inspection. I don't know what's at that 2 TracPipe, CounterStrike link, so I doubt that I will be 3 relying on it. I am not relying on the TracPipe brochure. 4 "Lightning Problem Solved" is the title of that, the somewhat 5 ironic title. The Omega Flex lightning Safety Recommendation 6 for Gas Piping Systems, I don't believe I'll be relying on 7 that in my opinions, nor do I expect to rely on the U.S. 8 patent. The International Association of Fire Chiefs' 9 position statement, I probably won't be offering any opinions 10 based on that, or the RTI Laboratories analysis certificate. 11 Now we see ANSI LC-1, LC-1024 LC-1027. It's 12 possible I may offer an opinion based on my knowledge of those 13 documents. Oh, that's Mark. Yeah, I won't be basing my 14 opinion on Goodson &amp; Hergenrether's report, Lightning Induced 15 CSST Fires. When I said "report," I meant paper. Well, Of 16 course I'm aware of it, and I'm in agreement with it. 17 Same thing with the next listed paper by Goodson &amp; 18 Hergenrether, Investigating the Causal Link Between Lightning 19 strikes, CSST and fire. Same thing, I won't be utilizing the 20 next paper from Goodson -- oh, this is a Goodson &amp; Ilove 21 paper. I won't be basing anything on it. The title of it is 22 "Electrical Characteristic of Corrugated Stainless Steel 23 Tubing Components and Systems. 24 Miss Court Reporter, are you okay with where I am 25 and what I'm listing out? Okay. I just realized I was</p>	<p style="text-align: right;">43</p> <p>1 offer in this particular case? 2 Q. Correct, yeah, yeah. I want to know what your 3 opinions are in this case. 4 A. I wish those bullet points were numbered. I'll have 5 to remember that next time. 6 Q. It would be easier. 7 A. Let's see. Not going to rely on a ground-lightning 8 environment. Not going to rely on aircraft lightning. Not 9 going to rely on -- oh, wait a minute. Probably not going to 10 rely on Lightning Technologies Test Report LT-13-380 -- or 11 3800, LT-13-3800. It's an LTI report. Probably not going to 12 rely on that. Next one is a lightning report that I might, 13 Lightning Technologies, Inc, report that I might rely on. I 14 doubt it, but it's possible, and it is LT-13-3691. Next one 15 is Testing of Bonded CSST Gas Piping, I'm probably not going 16 to rely on that because that is really an area that Kelly is 17 specialized in, but I did help with some of the test work on 18 that, setting up the original testing. Oh, then -- oh, I see. 19 The next one is an LTI report where you have grounded/bonded 20 CSST testing. That's LT-21-4973, and it was done March 22, 21 2021. And again, that would be useful for Kelly's testimony, 22 not for mine. The next is Lightning Technologies Dielectric 23 Breakdown. I doubt I'm going to rely on that. The next is 24 Validation of Installation Methods for CSST Gas Piping to 25 Mitigate Lightning-Related Damage. I'm probably not going to</p>
<p style="text-align: right;">42</p> <p>1 speaking kind of quickly, for an old Texas boy, anyway, and I 2 didn't want to mess the record up. 3 Where are we here? Oh, that's what I call the big 4 paper, or sometimes I call it the SV paper. It's the 2014 SV 5 paper that I wrote and Mark and Kelly helped. 6 Lightning-Caused CSST Hole Formation with Concurrent Ignition 7 of Escaping Fuel Gas: Validation of Field Observations by 8 Laboratory Testing. The next paper is -- it's by Integrity. 9 It's the ignition and sustained flame testing of escaping fuel 10 gas from CSST during lightning-induced arc events. and 11 then -- 12 Q. So you are or you're not relying on that paper? 13 A. Oh, sorry. It's possible I could. 14 Q. Okay. 15 A. I can't actually remember that one specifically, or 16 at this instant. I certainly do remember the 2014 paper, the 17 one that all three, Mark, Kelly, and I, worked on. 18 Q. Yeah, and just so maybe to move things a little 19 quicker, you don't have to read out the names of all of them. 20 But, again, in this list, just so I'm clear, because this 21 report was offered by all three of you combined, I want to 22 understand what you, yourself, are relying on. So, why don't 23 you just -- if there's something in the list that you did not 24 rely on, just tell us what that is. 25 A. And that would be for opinions that I'm likely to</p>	<p style="text-align: right;">44</p> <p>1 rely on that. The next two are emails to and from Goodson and 2 Torbin, and I'm not going to rely on those. Comments -- next 3 one is comments made by James Dickens, Lubbock City Council, I 4 doubt I'm going rely on it, but it's possible. It's bouncing 5 around, Adam. 6 Q. Sorry. There you go. 7 A. Oh, there you go. The next one is presentation made 8 by Tim Scanlan and Jim Dickens at the Lubbock City Council 9 meeting. I doubt I'm going to rely on that. Transcripts of 10 the comments made by James Dickens, I might rely on that. 11 Depends on what I am asked. The next seems to be just 12 information of Brennen Teel Foundation card. I don't know 13 what that is, actually. Then there's Vytenis Babrauskas, 14 Electrical Fires and Explosions, I doubt I'll be relying on 15 that in this case, but possibly. There are things said in 16 that document that I agree with. 17 This paper I guess -- or no, I guess it's an article 18 or a paper in fire technology. "Fire Safety of Grounded 19 Corrugated Stainless Steel Tubing in A structure Energized by 20 Lightning" by Bryan Haslam. I don't remember that document 21 specifically, so it's doubtful I'll be relying on it. The 22 next is a paper by Tom Eagar, and possibly, but doubtful that 23 I will rely on it. The next is "Variation in Lightning 24 Simulations," et cetera, et cetera. I'm not going to be 25 relying on that. The next one is a link which, apparently,</p>

<p style="text-align: right;">45</p> <p>1 goes to an NBCDFW -- to the NBCDFW site on a family -- blaming 2 fatalities on CSST, and I'm not going to rely on that, nor 3 will I be relying on the City of Lubbock ordinance. 4 Next page, please. I will not be relying on the 5 Donan Engineering report by Gary Woodall, that report or 6 paper, I'm sorry. I won't be relying on Tim Morse's 7 Electrical Fault Damage paper, nor will I rely on the 8 Real-World Forensic Engineering Animation CSST, nor do I 9 expect to rely upon the Defendant's Third set of Supplemental 10 Answers to Interrogos. And what do you know, we made it 11 through them all. 12 Q. Okay. Thank you very much for clarifying that. 13 A. Sorry I wasn't able to do that any quicker, but -- 14 Q. No, that's okay. 15 A. You know I will remember this next report. Next 16 time maybe we should use numbers instead of bullet points. It 17 would surely make it easier to do that and maintain a clear 18 and accurate record. 19 Q. No, I appreciate the clarification there. It's hard 20 to know sometimes when you have got three authors on the same 21 report. This -- just while we're on this page, this indicates 22 that a site visit occurred. I think you testified you were 23 not at the site visit; correct? 24 A. That's correct, I was not. 25 Q. And it indicates the laboratory examination, and you</p>	<p style="text-align: right;">47</p> <p>1 else? 2 Q. Not necessarily, but I want to know -- so, for 3 example, Opinion Number 1, it says, "Opinions provided by 4 Kelly Colwell and Mark Hergenrether." Do you see that? 5 A. Yes. 6 Q. Okay. So I think we have established this, because 7 Opinion 1 doesn't refer to you, it's fair to say that you're 8 not going to be the person to testify at trial with regard to 9 Opinion 1; correct? 10 A. Correct. 11 Q. Okay. So now Opinion 2 says, "Opinions provided by 12 Kelly Colwell, Mark Hergenrether and Johnie Spruiell." Do you 13 see that? 14 A. I do. 15 Q. So is there some aspect of Opinion 2 that you would 16 testify to but you would not expect Mr. Colwell or 17 Mr. Hergenrether to testify to? 18 A. You know, I suppose that is possible, Adam. I 19 suspect the reason that we wrote it that way -- I'm trying to 20 remember. We offered this opinion in other cases -- is if you 21 go back to that 2014 ISFI paper that I testified about just a 22 few minutes ago, The release of fuel gas from the arc hole and 23 CSST and presented it there in 2014 at the symposium, that was 24 written by all three of us. I mean, it was written by me 25 primarily, but I certainly had complete agreement with my</p>
<p style="text-align: right;">46</p> <p>1 were not at the laboratory examination; correct? 2 A. That's correct. 3 Q. Okay. I wanted to ask you, you mentioned the NFPA 4 921, and the report lists both the 2017 and the 2021 versions. 5 Have you read both of those? 6 A. No, no, I doubt it. I probably haven't read a 7 version since around 2017. 8 Q. Okay. 9 A. Maybe a little bit earlier. I mean, obviously, it 10 changes as time goes, but by not a whole lot. 11 Q. Is any of the work that you performed for the Diel 12 case based on NFPA 921? 13 A. No. I wouldn't say it's based on it. 14 Q. Okay. Do you recall, in doing any work on the Diel 15 case, opening up NFPA 921 and seeing what it said about 16 something? 17 A. I do not. I don't think I did. 18 Q. Okay. Is there -- you know, we can look at the 19 individual opinions, the summary, that are listed. And one 20 question that I had was, is there any opinion that is listed 21 here in the summary from 1 to 13 where you would be the person 22 giving the opinion and not Mr. Colwell or Mr. Hergenrether? 23 A. Are you asking me if there is an opinion I would 24 offer which, out of necessity, would be my opinion alone, and 25 an opinion which I formed without any assistance by anybody</p>	<p style="text-align: right;">48</p> <p>1 colleagues on it. We all came to the opinions that we came to 2 as we looked at the data that we generated during extensive 3 lab testing. 4 And this Opinion 2 in the Diel report is, you know, 5 in effect a description of just about any given test shot 6 during that test, or at least a test shot where you've got 7 ignition and sustained flame, which you did quite frequently 8 in that testing. And so any one of the three of us being very 9 familiar with that work could testify to it. Who is most 10 associated with that or who is the most deeply embedded in 11 that work would be Mark Hergenrether and me because we were 12 the two guys who actually did the testing. And then, of 13 course, as I say, I did the report primarily, but Mark helped, 14 Kelly helped, and -- I don't know. I may have just wandered 15 around and not answered your question, and so I'm sorry. Ask 16 it again. 17 Q. No, that's okay. Let me try it this way. 18 A. Trying to be -- 19 Q. There appear to be -- and correct me if I get this 20 wrong, but there appear to be two basic opinions in Opinion 21 Number 2. The one is that a lightning-induced arc hole was 22 created in the CSST. That's one opinion; correct? 23 A. Yes. 24 Q. And then the second opinion is that the LP gas 25 escaped from the hole and was ignited during the arc event;</p>

<p>49</p> <p>1 right?</p> <p>2 A. Well, you could break that into number 2 and</p> <p>3 number 3, though. The gas escaped, and the gas is ignited --</p> <p>4 Q. Okay.</p> <p>5 A. -- and you then had a fuel gas-fed fire. So</p> <p>6 depending on how you want to parse that thing, you could make</p> <p>7 four statements out of it.</p> <p>8 Q. Okay. So, the four statements would be there is a</p> <p>9 hole, that's the number 1. The gas escaped, that's number 2.</p> <p>10 The gas ignited, that's number 3, and that resulted in a fuel</p> <p>11 gas-fed fire. That's number 4; right?</p> <p>12 A. That's correct.</p> <p>13 Q. Okay. So of those four opinions that are embedded</p> <p>14 in number 2, is there some aspect that you, yourself, would be</p> <p>15 the only person who would have the expertise to testify to</p> <p>16 with regard to those opinions?</p> <p>17 A. No. Both Mark and I would have the requisite</p> <p>18 knowledge and qualifications to testify about that.</p> <p>19 Q. Okay.</p> <p>20 A. I've got a question.</p> <p>21 Q. Okay.</p> <p>22 A. Time maybe for a short break and --</p> <p>23 Q. Oh, I'm sorry yeah. I didn't realize we've been</p> <p>24 going that long, but yes, let's take --</p> <p>25 A. No, that's okay.</p>	<p>51</p> <p>1 in your report. And you broke that down, you would agree, I</p> <p>2 think, into four separate opinions; is that fair?</p> <p>3 A. That's fair.</p> <p>4 Q. Okay. And would you agree that the last opinion,</p> <p>5 which is that there was a fuel gas-fed fire, that opinion</p> <p>6 depends on the previous three opinions being accurate;</p> <p>7 correct?</p> <p>8 A. Yes.</p> <p>9 Q. All right. So let's look at Opinion 3, and these</p> <p>10 are opinions that are provided by Mr. Hergenrether and you.</p> <p>11 And is there a particular aspect of Opinion 3 where you would</p> <p>12 expect you to be the witness to testify about it, or is this</p> <p>13 something that you both could testify to?</p> <p>14 A. We both could testify to it, but it is what I would</p> <p>15 characterize as primarily my opinion.</p> <p>16 Q. Okay. And why do you say that?</p> <p>17 A. The total area of the arc hole, I found it to be</p> <p>18 0.38 square millimeters in area. I estimated the charge</p> <p>19 transfer using Hagenguth equation and reported the amount of</p> <p>20 charge transferred, or determined the amount of charge</p> <p>21 transferred to be 0.12 coulombs. I am the one that did that</p> <p>22 basic work.</p> <p>23 Q. Thank you. Have you ever conducted any laboratory</p> <p>24 testing that produced an arc hole in CSST that is .038 (sic)</p> <p>25 square millimeters?</p>
<p>50</p> <p>1 Q. -- a short break. How much time do you need?</p> <p>2 A. Oh, give me 10, 15 minutes tops.</p> <p>3 Q. Okay. You want to come back at 10:30 your time?</p> <p>4 A. Yeah, that would be fine.</p> <p>5 Q. Perfect.</p> <p>6 VIDEOGRAPHER: Off the record at 10:15 a.m.</p> <p>7</p> <p>8 (Off record 10:15 a.m. to 10:31 a.m.)</p> <p>9</p> <p>10 VIDEOGRAPHER: Back on the record at 10:31 a.m.</p> <p>11 Q. (By Mr. Masin) Welcome back, Mr. Spruiell. You can</p> <p>12 hear me okay?</p> <p>13 A. Yes, sir.</p> <p>14 Q. Great, perfect. We just took a short break. And</p> <p>15 again, just if for some reason you need a break, we'll take a</p> <p>16 break any time as long as a question isn't pending. And at</p> <p>17 some point, we will try to give our reporter some time for</p> <p>18 lunch, if we end up taking that long. So we'll see how it</p> <p>19 goes.</p> <p>20 A. Okay.</p> <p>21 Q. Is there anything about your testimony from this</p> <p>22 morning which you wish to change or amend in any way?</p> <p>23 A. I don't believe so.</p> <p>24 Q. Okay. So we were talking about Opinion 2 in your</p> <p>25 report before we took the break. Let me go back to Opinion 2</p>	<p>52</p> <p>1 A. I'm not sure. We -- during the testing for --</p> <p>2 during the testing from which we derived our opinions in the</p> <p>3 2014 ISFI paper, we did have a variation in hole size from</p> <p>4 test shot to test shot. For reference that's called</p> <p>5 internally here the 200 Series testing, I believe.</p> <p>6 And then in the P Series testing, we haven't issued</p> <p>7 a paper on that, although I -- well, I wrote a paper and</p> <p>8 submitted it to a magazine. They didn't want it. It was too</p> <p>9 technical, I think. We did, essentially, the same work that</p> <p>10 we had done in the 2014 ISFI paper, only with propane gas</p> <p>11 instead of natural gas. And, again, we got a variation in</p> <p>12 hole size even through the amount of charge transfer in each</p> <p>13 test shot throughout the entire 200 Series, as well as P</p> <p>14 Series. In each case, the test shot charge transfer was about</p> <p>15 1.3 coulombs, as I recall. Despite that, we did see variation</p> <p>16 in size in the CSST hole.</p> <p>17 Q. Have you ever measured the hole sizes in the testing</p> <p>18 that you have done?</p> <p>19 A. You know, I think that surely I must have, but I</p> <p>20 don't have specific recollection of having measured the 200</p> <p>21 and P Series test hole.</p> <p>22 Q. When you say the 200 Series, are you referring to</p> <p>23 the testing that was done in the paper that was entitled</p> <p>24 "Lightning Cause CSST Hole Formation with Concurrent Ignition</p> <p>25 of Escaping Fuel Gas," that paper?</p>



<p>53</p> <p>1 A. That's correct. That's what I was shorthanding 2 or -- 3 Q. Got it. 4 A. -- or refer to the shorthand as the 2014 ISFI paper. 5 Q. Okay. So sitting here today, you don't know one way 6 or another whether you produced a .038 (sic) square millimeter 7 or thereabouts sized hole doing the testing that you did for 8 that paper, correct, the 200 Series paper? 9 A. That's correct. I'm not sure that we did, did or 10 didn't. 11 Q. Do you -- 12 A. I think I know where you might be going. In fact, 13 there's more to that story, but let's continue on and just 14 continue to answer your questions, and I will try to make sure 15 the record is clear at some point. 16 Q. Okay. In doing the 200 Series testing or any other 17 testing that you have done, did you conduct testing on CSST 18 where the electrical charge transfer was 0.12 coulombs, or 19 thereabouts? 20 A. We may have done that at Integrity, but I did not 21 perform any of that testing. 22 Q. And we will go over this when we talk about your 23 paper again. But in that paper, the 2014 paper, the 200 24 Series paper, your initial energy charge was approximately 1.3 25 coulombs; correct?</p>	<p>55</p> <p>1 the extent that I did the calculation. The opinion itself 2 can -- there is no preference between me and Mark. You can 3 rely on either of us for that. 4 Q. Okay. Have you ever tested -- have you ever 5 conducted testing of electrical charge transfer on black iron 6 pipe? 7 A. Yes, we have. And we're also aware of other folks' 8 testing. 9 Q. Okay. And have you ever conducted electrical charge 10 transfer testing on what you describe as enhanced CSST 11 products? 12 A. Yes, we have. 13 Q. Okay. For the CSST products, have any of those been 14 Omega Flex products? 15 A. They have. 16 Q. Okay. And which products? 17 A. And gas type. 18 Q. Which products? 19 A. Omega Flex and gas type. 20 Q. Yeah, but -- 21 A. Omega Flex's product is CounterStrike. 22 Q. Okay. 23 A. And gas type/Titeflex is something called 24 FlashShield. 25 Q. Okay. And have you ever tested an electrical charge</p>
<p>54</p> <p>1 A. That's correct. 2 Q. Okay. And did you ever measure the transfer charge 3 at the site of the CSST where there was or wasn't a hole 4 created? 5 A. I'm not quite sure what you're asking there. 6 Q. Sure. 7 A. It was an opening through the charge transfer. 8 Q. Did you measure the amount of electricity at the 9 site of the arc? 10 A. Well, the amount of the charge transfer is the same 11 at any point in the circuit -- 12 Q. Okay. 13 A. -- from the capacitors to the resistors to the 14 connecting line to the arc to -- I mean, it's about 1.3 15 coulombs everywhere. 16 Q. Okay. And so in that paper, you didn't use a value 17 of 0.12 coulombs or anything like that; correct? 18 A. We did not. 19 Q. Okay. In Opinion 4, again, this opinion is 20 indicated to be provided by Mr. Hergenrether and Mr. Spruiell, 21 you. Is there some aspect of the opinion where you would 22 expect you would be the primary person to testify to? 23 A. Only to the extent that I am the guy who calculated 24 or used the Hagenguth calculation to -- the Hagenguth equation 25 to calculate the 0.12 coulombs of charge transfer. So only to</p>	<p>56</p> <p>1 transfer of 0.12 coulombs, or thereabouts, on either black 2 iron pipe or any of Omega Flex's, what you described as an 3 enhanced product like CounterStrike? 4 A. No. And in no testing of those products would we 5 have used such a very small value of charge transfer as 0.12 6 coulombs. 7 Q. Okay. Opinion 5 appears to be basically an opinion 8 that as a result of the hole, that gas would have escaped 9 through the hole; is that fair? 10 A. As a result of the arc hole, yes. 11 Q. Okay. And I guess I'm just curious, is there 12 something that is not obvious about that opinion? In other 13 words, if you -- if I punctured a balloon, the air in the 14 balloon comes out. If I put a hole in something, whatever is 15 in the hole is probably going to come out. Is it -- 16 basically, is it as simple as that, or is there something more 17 to it? 18 A. You're asking in our opinion if water is wet, is 19 that -- 20 Q. I mean, I'm just wondering why this is a separate -- 21 and you have identified this as a separate opinion, so I'm 22 wondering why it's a separate opinion. 23 A. It's, I guess, inartful enough that it looks -- I 24 can see where you are. We're just reiterating the fact that 25 the lightning discharge and the portion of it that gets to the</p>

<p>57</p> <p>1 CSST at the arc is enough to create an arc hole. 2 Q. Okay. 3 A. That's really what we're trying to get at there. 4 Q. Okay. 5 A. It's not that there's some hidden magic or genius 6 there. It's just the arcs can create holes in CSST, and lo 7 and behold, did in this case. 8 Q. Okay. And is there some aspect of Opinion 5 where 9 you would expect you to be the only one to testify to it, or 10 is this an opinion where either you or Mr. Hergenrether can 11 testify to? 12 A. Either of us. 13 Q. Opinion 6 refers to bonding, and it says it's by 14 Mr. Colwell. And then I take it you're not giving any 15 opinions relating to Opinion 6; correct? 16 A. That's correct. 17 Q. And Opinion 7 also refers to bonding, again, by 18 Mr. Colwell. You're not intending to give any opinions 19 relating to that; correct? 20 A. Yes, sir. 21 Q. And is it fair to say, in general, that in this case 22 you're not offering any opinions at all relating to bonding? 23 A. I will not be offering any of those opinions. 24 Q. And are you offering any opinions in this case 25 relating to either the National Electric Code or the National</p>	<p>59</p> <p>1 A. Not to my knowledge, but you would be better -- it 2 would be better to ask Kelly that. 3 Q. Okay. 4 A. I was not associated with any such testing, if it 5 was performed. 6 Q. Was any of the testing done in Number 8 published? 7 A. Was any of it in Testing 8 what? 8 Q. Published. 9 A. Oh, maybe. I'm not sure. 10 Q. Was the testing -- 11 A. I didn't, and I wasn't associated with it. 12 Q. Okay. So we looked at some articles that were in 13 your CV before. This testing that you have described in eight 14 here, that's not published in any of those articles; correct? 15 A. Yeah, I don't think so. I don't think -- I don't 16 think those three articles in my CV -- I don't think bonding 17 is amongst them. 18 Q. Okay. And to the extent that this paragraph 8 19 refers to opinions relating to bonding, you would expect 20 Mr. Colwell to testify to that, not you; correct? 21 A. Yes. 22 Q. Okay. In Opinion 9, this one is by Mr. Colwell and 23 Mr. Hergenrether and you. Same question, is there some aspect 24 of Opinion 9 where you would expect that you would have 25 primary responsibility for testifying to the opinion rather</p>
<p>58</p> <p>1 Fuel Gas Code? 2 A. Probably not. As I said earlier, there might be 3 something, or might not be, that I would be opining on that 4 somehow referred to the National Fuel Gas Code, but I don't 5 think so. 6 Q. Okay. And Opinion 8, this one appears to be from 7 you and Mr. Colwell. Is there some aspect of Opinion 8 that 8 you would expect you to be the witness to testify to rather 9 than Mr. Colwell? 10 A. No. I think I'm included in Number 8 because I 11 assisted in the initial setup and design of testing for the 12 bonding testing, quite some time ago, actually, by now. It's, 13 I'm sure, six or seven years by now. And so later Kelly 14 carried that forward with, oh, I think maybe with -- maybe 15 with Mark, but I think also maybe Derek Geer here. But the 16 reason I'm there is because I was an early helper, if you 17 will, in the bonding testing. 18 Q. And the testing that is described in Number 8 here, 19 when did that testing occur? 20 A. Some of the bonding testing, as I say, that initial 21 stuff that I helped set up, that's quite some time ago; five, 22 six, seven years, maybe eight. 23 Q. Okay. So is there any testing referred to in 24 Number 8 that you did after the Diel case, after the Diel fire 25 in July of 2020?</p>	<p>60</p> <p>1 than Mr. Colwell or Mr. Hergenrether? 2 A. No. We are all three of us equally familiar, I'd 3 say, with the appearance of CSST holes caused by electrical 4 arcing and other phenomenon. 5 Q. And when you say that the holes in your testing and 6 the Diel residence have "smooth-rolled edges consistent with 7 melting and resolidification of stainless steel material," is 8 that opinion based upon your visual examination of the holes 9 or some sort of laboratory test or scientific test? 10 A. That description is Kelly's, the smooth-rolled 11 edges. It's just the term of art that he likes to call it. 12 It's based on visual exam, and then exam of the holes under a 13 microscope also. So that includes very high power and very 14 high resolution with scanning electron microscope. And 15 there's just a certain characteristic appearance that you get 16 from these short duration flattening-type arcs. You know, 17 also there's some splatting I call it, S-P-L-A-T-T-I-N-G, of 18 the metal near the hole that seems to be associated with these 19 lightning-type, lightning-simulated, and lightning-actual 20 arcs. 21 Q. The opinion relating to the smooth-rolled edges or 22 the splatting, have you published those opinions anywhere? 23 A. I have not. 24 Q. Do you know whether Mr. Colwell or Mr. Hergenrether 25 have published those opinions anywhere?</p>

<p>61</p> <p>1 A. I don't know with certainty, but I don't believe so, 2 or I probably would have been asked for editorial input and 3 technical input. 4 Q. If you look at Opinion 10, that's an opinion by 5 Mr. Colwell. You're not anticipating testifying about 6 Opinion 10; correct? 7 A. That's right. 8 Q. And the same thing with Opinion 11, Mr. Colwell and 9 Mr. Hergenrether, you're not anticipating testifying about 10 Opinion 10 or 11; right? 11 A. I will not be testifying about that, no. 12 Q. Okay. Would you agree that it was not part of your 13 responsibilities to consider and rule out other potential 14 electrical or mechanical ignition sources for the fire? 15 A. That's correct. It was not my responsibility to do 16 that work, and I relied upon my colleagues with regards to any 17 questions that I had about that, my Integrity colleagues. 18 Q. In paragraph 12, that is an opinion by 19 Mr. Hergenrether and you. Is there some aspect of paragraph 20 12 where you would expect to be the witness to testify rather 21 than Mr. Hergenrether? 22 A. No. 23 Q. So you both could potentially testify about that 24 subject? 25 A. Correct.</p>	<p>63</p> <p>1 Q. Okay. You haven't had it peer reviewed; correct? 2 A. I usually do that. I mean, it's -- if I didn't 3 share it, I meant to. 4 Q. Okay. Have you submitted that -- well, strike that. 5 You said you submitted it to one publication that rejected it. 6 Outside of the context of the litigation in that other 7 publication, have you ever submitted that paper to anyone 8 else? 9 A. Outside of the context of litigation, oh, you're 10 saying outside of producing it in -- right, I'm sorry. No, I 11 don't believe so. 12 Q. Okay. 13 A. That one organization that we submitted it to, and 14 then, of course, I produced it for -- as documents upon which 15 I have relied for various court cases. 16 Q. So just to round out that question, then, the 17 testing that your report refers to is the 200 Series testing 18 that is referenced in the 2014 paper, the P Series testing 19 which you submitted, but the paper -- the publication didn't 20 pick up on. And was there any other testing that you have 21 done that relates to your opinions in this case? 22 A. I know that we have done another couple of shorter, 23 less comprehensive tests. I think of the P Series and the 200 24 Series as pretty much a big deal, very comprehensive, and you 25 can determine a lot of things from those. I know that we have</p>
<p>62</p> <p>1 Q. And the second sentence refers to demonstrations 2 that you did through physical testing in your lab. Does this 3 refer to the 200 Series of testing that you did in 2014? 4 A. The 200 and the P Series and others, too, but those 5 are the two primary ones. 6 Q. Okay. And those are the testing that have been 7 reflected in your papers, is that right, that are on your CV? 8 A. There is -- the P Series is not reflected in a paper 9 that was published. 10 Q. Okay. 11 A. I wrote a draft of it for an organization, and they 12 didn't pick up on it. And so I just left it, I guess, as an 13 internal memo, if you want to call it that. 14 Q. Okay. So the P Series testing that you did, when 15 did you do that? 16 A. Sometime after the 200. Maybe a couple of years 17 later, I'm guessing. 18 Q. Okay. Would it have been before July of 2020? 19 A. Yeah, yeah. 20 Q. Yeah. 21 A. Sure. 22 Q. And that's not a paper that you have shared with 23 anyone outside of Integrity? 24 A. I think we may have produced it in this case, I'm 25 not sure.</p>	<p>64</p> <p>1 done some other short series, series of CSST testing. I can't 2 name any off the top of my head right now, and I can't 3 remember what specifically they were about, but I do remember 4 there are some. I just can't remember what the deal is. 5 Q. Okay. And the ones that you can't remember, did you 6 ever reduce that to a paper that you submitted to an outside 7 organization for peer review? 8 A. You know, I don't think so. 9 Q. Okay. Opinion 13 indicates it's from Mr. Colwell, 10 Mr. Hergenrether and you. Is there some aspect of Opinion 13 11 that you expect to be the witness to testify about rather than 12 Mr. Colwell or Mr. Hergenrether? 13 A. I don't believe there is anything about my knowledge 14 that would make me the specific and particular favorite to 15 testify about Item Number 13. 16 Q. Okay. Now, in this opinion, you opine that there's 17 similarities between the Diel home and other cases. Have 18 you -- other than what is in Opinion 13 and what is in your 19 report, have you written a report attempting to compare any of 20 these cases that you worked on with each other? 21 A. Sort of a meta report, is that what you're saying? 22 A commentary on a number of different CSST fires, that sort of 23 thing? 24 Q. Yeah. I mean, you say there were numerous 25 similarities between these cases. Obviously, you have gotten</p>

<p>65</p> <p>1 it 8F here. I'm wondering whether or not you have done 2 anything to render a more formal opinion in writing with 3 regard to the similarities that you contend exist between the 4 cases? 5 A. You know, I don't think we have. I don't believe 6 so. 7 Q. This may or may not be you, so if it's not you, then 8 let me know. But the methodology section here refers to NFPA 9 921, and I believe you testified that you didn't really -- 10 that really wasn't part of your purview; is that fair? 11 A. Well, the scientific method is always part of your 12 purview in this, I believe, that in this type of work, this 13 investigation work, and analytical work to determine opinions 14 from the basic one. 15 Q. Okay. 16 A. It's not something that you sit down and study to a 17 great extent before you issue each and every opinion. You're 18 aware of it. You know how it works after years of practice. 19 It's become second nature, frankly. 20 Q. Right. So your opinion in this case, essentially, 21 is that the lightning strike induced a 0.38 square millimeter 22 0.12 coulomb-sized hole in the CSST which caused gas to escape 23 which then ignited and caused a fuel-fed fire; is that fair? 24 A. Yes, which also ignited and caused the fuel-fed 25 fire.</p>	<p>67</p> <p>1 to check that hypothesis. And part of the hypothesis, or the 2 way to say the hypothesis, is that those things are assumed to 3 be true. That is, let us assume that this charge simulating 4 lightning can't put a hole in CSST. Let's assume as a 5 hypothesis that the gas cannot be ignited, or if ignited, it 6 cannot cause a sustained flame. Let us assume those things. 7 Then we set up the testing, additions that should simulate 8 what happens in the field in normal use during lightning 9 events, and we found that those hypotheses that, frankly, 10 others have made, those hypotheses being no hole, can't 11 ignite, can't get sustained flame, we found that all of those 12 were untrue. We disproved and refuted all of those 13 hypotheses. And we were left with the stark evidence and 14 knowledge that, yes indeed, lightning simulating -- or 15 electrical arcing testing that simulates lightning strikes can 16 indeed cause all of those things. And those things are those 17 four items. You know, it causes the hole. Remember we broke 18 it out into four? It causes the hole. The gas escaped. That 19 was obvious. The escaping gas ignites. And then not only 20 does it ignite, it sustains as a flame under a good number of 21 conditions. 22 So all of that -- you know, all of that testing is 23 directly applicable to the opinions or conclusions formed in 24 this report on the Diel matter specifically. And so I know 25 that's a terribly long and complicated answer, but it's the</p>
<p>66</p> <p>1 Q. Okay. So, in your report under "Methodology," and 2 this refers to the NFPA 921, it says here that, "Testing of 3 the hypothesis should be designed to disprove or refute the 4 hypothesis." Do you see that? 5 A. Yes. 6 Q. Did you do any testing with regard to the Diel case 7 that was designed to disprove or refute the hypothesis that 8 you offered in this case? 9 A. Let me see how that applies in this case. Sometimes 10 there is a somatic -- I have a somatic problem sometimes with 11 organizing how the work in a particular file works with the 12 scientific method. And I'm having that interpretation gap, if 13 you want to call it that, right now. 14 I would like to refer to our original work, let's 15 call that the ISFI work, where at the time we did that, it was 16 being alleged that -- this is the ISFI 2014 paper -- it was 17 being alleged by colleagues in the field who were from the 18 other side of us in some of these cases, the CSST cases, 19 that -- well, first it was alleged that a lightning arc 20 wouldn't -- or lightning energy wouldn't create a hole in CSST 21 because it was insulated, and then we also -- and then all the 22 holes that one saw, therefore, must have been caused by Romex. 23 We also heard that if the lightning could somehow 24 cause a hole in the CSST, that the escaping gas couldn't be 25 ignited by the electrical arc. And so we designed our testing</p>	<p>68</p> <p>1 only way I know how to do it. That's how the testing of a 2 hypothesis has been designed to be disproved and refuted in 3 this case and, really, in every case. 4 Q. So in your testing of CSST, all of which occurred 5 prior to the Diel's facts being known to you; fair? 6 A. All right. 7 Q. In some cases, you did not get a hole; correct? 8 A. In some cases? 9 Q. Yeah. 10 A. Oh, in our testing, you mean? 11 Q. Right. 12 A. Yes. Sometimes we did not get a hole, that's true. 13 Q. And sometimes -- and we'll look at this in more 14 detail, but sometimes you did not get any ignitions at all; 15 correct? 16 A. That's not quite right. I believe that we almost 17 invariably got ignition. We sometimes did not get a sustained 18 flame after that ignition. I'm not trying to be picky or 19 difficult, but those are two different things. 20 Q. Okay. So in some circumstances, you will at least 21 concede that you did not get a sustained flame; correct? 22 A. That's correct. That lack of sustained flame 23 occurred more often during the 200 Series testing, natural gas 24 testing. 25 Q. So --</p>



<p>69</p> <p>1 A. In propane testing, the sustained flame was more 2 frequent.</p> <p>3 Q. You would agree that if there is no hole, then there 4 would be no gas-fed fire as a result of that; correct?</p> <p>5 A. Well, that's correct.</p> <p>6 Q. And if there is no sustained flame, there would be 7 no gas-fed fire as a result of that; correct?</p> <p>8 A. Right. There is unlikely to result -- because when 9 the arc event did not result in a sustained flame, you're not 10 likely to have a building fire.</p> <p>11 Q. So when you were presented with the facts of the 12 Diel case, which is a 0.38 square millimeter hole, 0.12 13 coulombs of electrical transfer; right?</p> <p>14 A. According to Hagenguth, yes.</p> <p>15 Q. Yeah. When you were presented with those facts, and 16 you had a hypothesis that you would get a hole of that size 17 and you would get a sustained flame, what testing did you do 18 to disprove or refute that hypothesis based upon the facts 19 that you had available to you in the Diel case?</p> <p>20 A. I don't see that it works that way, Adam. There 21 is -- you know, our testing finally proved, after having 22 disproved other things, our testing proved that you can, in 23 fact, and quite frequently, will get a hole, gas escaping, 24 ignition sustained flame from the lightning-simulating arc 25 event. There is no good reason to think that you would not</p>	<p>71</p> <p>1 pinpricked our plastic insulation to simulate the breakdown of 2 the -- electrical breakdown of the plastic jacket on this CSST 3 that we were testing, and we found that as the arc travels 4 through that tiny little pinprick, the arc -- at least at 1.3 5 coulomb, the arc doesn't make the hole in the plastic jacket 6 much bigger. And, in fact, what you'll have is the pinprick, 7 then you hit it with the arc, and the arc goes through and 8 doesn't really make the pinprick hole any bigger, but it goes 9 down to make a significantly bigger hole in the CSST.</p> <p>10 Well, in the case of the 1.3 coulomb versus the .12 11 coulomb Diel residence, the factor that controls how much 12 propane comes out and the factor which controls whether or not 13 the -- or factors to control whether or not there's going to 14 be a sustained flame or not are more about the jacket 15 initially than about the CSST or the hole in the CSST.</p> <p>16 Q. Okay. When you learned about the Diel facts, when 17 you learned when you performed the calculations that resulted 18 in your opinion that this was a 0.38 square millimeter hole 19 and a 0.12 coulomb transfer, you did not then do testing to 20 substantiate your conclusion that this was a gas-fed fire. 21 You relied on testing that you had done prior to learning 22 those facts; is that fair?</p> <p>23 A. We relied on the earlier testing and just general 24 experience of combustion to say that there was no need to do 25 any testing. It never even occurred to us to do any other</p>
<p>70</p> <p>1 also get the escape of gas and the ignition and the sustained 2 flame from a smaller hole. This hole is probably smaller than 3 the ones that we generated during our P Series or 200 Series 4 testing, just by guessing. I'm saying that having seen the 5 photographs, even though, as I mentioned earlier, I don't 6 think I have ever actually measured the hole sizes.</p> <p>7 In our 200 and P Series testing, nevertheless, I 8 have got a pretty good eye for how big they are compared to 9 this hole, and they're bigger. No doubt about it.</p> <p>10 But there's one thing that shines in terms of 11 whether you might get the sustained flame or not, and that's, 12 one, propane -- apparently, based on our testing -- likes to 13 sustain a flame better than natural gas. And, yes, I know as 14 a gas can't have thinks -- thinking about whether it likes to 15 do something or not, but the fact is we found that propane is 16 more flame sustainable than natural gas in testing. And there 17 is probably a couple reasons for that, but I don't know with 18 certainty if those are correct. I just know what the testing 19 demonstrates.</p> <p>20 Just a second, the phone has -- I'm sorry. We have 21 a new phone system. I don't how to turn all that stuff off.</p> <p>22 So propane tends to sustain a flame easier than 23 natural gas does. Further, initially -- here's the reason 24 that the hole size probably doesn't matter a bit. What we 25 discovered during our testing was that the -- you know we</p>	<p>72</p> <p>1 testing. There was a hole that is releasing propane. It gets 2 a lightning arc on it, so it probably caught fire and burned.</p> <p>3 Q. All right. Let's take a look at your Exhibit 6 4 -- 5, thank you.</p> <p>5</p> <p>6 (Exhibit 5, 2014 Paper, marked for identification)</p> <p>7</p> <p>8 Q. (By Mr. Masin) I'm going to show you what has now 9 been marked as Exhibit 5. Do you recognize this document?</p> <p>10 A. Yes, sir.</p> <p>11 Q. And for the record, it is a paper entitled 12 "Lightning-Caused CSST Hole Formation with Concurrent Ignition 13 of Escaping Fuel Gas: Validation of Field Observations by 14 Laboratory Testing." This is a paper you prepared in 2014; 15 correct?</p> <p>16 A. Yes.</p> <p>17 Q. And during the course of your deposition today, we 18 have been referring to the 200 Series testing. When we say 19 200 Series testing, we're referring to the testing that is 20 contained within this paper; correct?</p> <p>21 A. That is the testing which underlies this paper, 22 correct.</p> <p>23 Q. And you're listed as the principal author of this 24 paper; is that fair?</p> <p>25 A. That's correct.</p>

<p>73</p> <p>1 Q. So, if we go to Figure 5, which are the results of 2 the testing that you did -- I'm just going to make this a 3 little larger so we can see what we're looking at. It's too 4 large. You did 37 tests that you published; correct? 5 A. That's correct. 6 Q. Okay. There were other ones, but you excluded them 7 for various reasons; correct? 8 A. And, by the way, so far I've been calling those test 9 shots in the deposition, just for clarity. 10 Q. Right. And the 37 tests that you did, this column, 11 Column C, indicates what coulombs were used; correct? 12 A. That's correct. 13 Q. And so they are all either in the range of 1.2 to 14 1.3 coulombs? 15 A. That's correct. 16 Q. Okay. Nothing less -- certainly nothing less than 17 1 coulomb of charge; correct? 18 A. That's correct. 19 Q. And, in fact, in your paper, you had done a test 20 that was 1.17 coulombs, and you eliminated that from your 21 results because it was below -- 10 percent below the average, 22 and you didn't want to include it for that reason; is that 23 right? 24 A. That's correct. 25 Q. Okay. Now, here there is a column that says,</p>	<p>75</p> <p>1 potential. 2 Q. But the lightning did not directly strike the CSST, 3 of course; right? 4 A. It doesn't. That's why I wanted that in the way 5 that I did. 6 Q. The amount of the electricity that you claim hit the 7 CSST was 0.12 coulombs; correct? 8 A. Correct. 9 Q. And you did not use anything less than 1 coulomb in 10 this testing; correct? 11 A. You're going down a wrong path, Adam. That's 12 correct, we -- nominally we shot at 1.5 coulombs on all of 13 this. Really, there's a correction. There's an error between 14 the shunt-measured coulombs and the actual coulombs that were 15 delivered. Not much, but there's a little bit, but that's all 16 to one side. 17 When the lightning strike hits a house, there will 18 be on the conductive things in that house -- if you were to 19 measure the voltage from the CSST to actual ground, from the 20 furnace to actual ground, from this, that, and the other at 21 different points on the CSST, the ground, you will get 22 different values of voltage. And what I'm saying is, is that 23 it's evident that when you have a strike at a house and you 24 have the CSST become energized, or something nearby the CSST 25 become energized, and there is an arc that jumps from the</p>
<p>74</p> <p>1 "Create Hole." Do you see that? 2 A. Yes. 3 Q. Okay. And there were several tests that you did 4 where there was no hole created; correct? 5 A. Yes. I'm sure you noticed that those are either 6 primarily or exclusively those in which we were testing bare 7 CSST. That is to say, CSST from which we removed the yellow 8 jacket, unlike as was the case in the Diel house. Of course 9 it had jacketed CSST. 10 Q. In the testing that you did where there was a 11 jacket, you intentionally pinpricked the jacket before the 12 test; correct? 13 A. That's correct, as all investigators have done -- 14 almost all investigators in all testing of which we are aware. 15 Q. Nobody would have gone up into the Diel's attic and 16 pinpricked their CSST before the lightning event; right? 17 A. Oh, certainly not. It wouldn't have been necessary 18 because the Diel lightning strike would have had the 19 exceptionally high voltage required to pierce the jacket 20 without a pinprick. 21 Q. And by "exceptionally high voltage," are you 22 referring to 0.12 coulombs? 23 A. No. That's coulomb, not voltage. 24 Q. Right. 25 A. Lightning strikes have millions of volts of</p>	<p>76</p> <p>1 CSST -- to or from the CSST to this other item, it's expected 2 that there's going to be possibly, you know, 75,000 volts, 3 100,000 volts, maybe a million volts between those to cause 4 breakdown of the jacket insulation and to allow the arc to 5 form. 6 In our case because of the limitations of our 7 equipment, we can't provide the probably 60,000 or so volts 8 required to pierce the plastic jacket. That's why we have to 9 pinprick. And that's why other people, including Exponent, 10 have pinpricked during their testing is because it's pretty 11 hard to deliver those high voltages with a machine which also 12 can deliver reasonable levels of charge transfer, like -- and 13 by "reasonable," I mean one and a half, two, three. 14 Q. Your opinion in this case, though, is that the 15 charged transfer that caused the hole in the Diel CSST was 16 0.12 coulombs; correct? 17 A. That's what it calculates out to via the Hagenguth 18 equation, yes. 19 Q. All right. So in the 37 tests that you published 20 here, if we look at whether or not there was a flame, 21 Number 1, momentary ignition, flame blew out; right? 22 A. That's right. 23 Q. Okay. Number 12, no indication of ignition visible 24 in video at all; right? 25 A. Right. And that's an important one, too, in terms</p>


<p style="text-align: right;">77</p> <p>1 of the statistics of the thing. I think that's the only one 2 in which I was unable to see any indication of ignition when I 3 reviewed the video. I went back and -- not videotapes, but 4 video files, you know. I went back and looked at them really 5 carefully to see, did we have ignition, or is it just hard to 6 see. And I believe it would show them all, I think that's 7 only one where I found that no, there's just no ignition 8 visible at all.</p> <p>9 Q. Okay. When you say there was momentary ignition, 10 that's not enough to cause a fire elsewhere; correct?</p> <p>11 A. Right. I would say it would be unlikely for those 12 momentary ignitions that I'm describing here.</p> <p>13 Q. Flame blew out right away; right?</p> <p>14 A. Huh?</p> <p>15 Q. The flame basically -- whatever flame there was blew 16 out right away --</p> <p>17 A. Right.</p> <p>18 Q. -- because of the velocity of the escaping gas; 19 right?</p> <p>20 A. It pops into existence and pops out of existence 21 very quickly.</p> <p>22 Q. Okay. So would you agree with me -- and you can 23 count them if you want to -- that in 15 of the 37 cases that 24 you published, there was no sustained flame?</p> <p>25 A. Let's just assume that I trust your counting.</p>	<p style="text-align: right;">79</p> <p>1 far as how you -- you design tests not to give you the data 2 that you want, but the data that you need. And the data that 3 you need are the ones that you, frankly, have no idea were 4 going to happen beforehand sometimes. And that's one of them. 5 We weren't sure what effect it would have on the result when 6 we varied the gap inch. What if there's a distance between 7 the gap -- between the two electrodes. So we included that.</p> <p>8 Q. Okay.</p> <p>9 A. We made an eighth-inch gap and we made a 10 three-quarter-inch gap. And what we found was if you have a 11 three-quarter-inch gap, you're less likely to get a sustained 12 flame. If the gap is small or -- you know, in this case, I 13 believe reading our report, the CSST was essentially in 14 contact with a bundle of coax cables that were below it, so it 15 was pretty dadgum close to the thing it arced to or the thing 16 that arced to it.</p> <p>17 Q. Did you ever take a measurement -- well, strike 18 that. Did either you or anyone else with Integrity measure 19 the distance between the hole in the CSST and the coax cable?</p> <p>20 A. I don't know. It's been characterized to me as -- I 21 think as I said in the report, the CSST was lying upon this 22 bundle of cables, so that's as close as it gets.</p> <p>23 Q. Do you have --</p> <p>24 A. I'm not aware of any measurement that was taken.</p> <p>25 Q. Do you know whether -- well, strike that. Did you</p>
<p style="text-align: right;">78</p> <p>1 Q. Okay.</p> <p>2 A. Sure.</p> <p>3 Q. And those were all in situations where you were 4 using at least 1.2 coulombs of electrical transfer; correct?</p> <p>5 A. Yes.</p> <p>6 Q. Now, one of the other variable conditions that you 7 have is gap inches. What do you mean by that?</p> <p>8 A. That's the distance between the CSST and the other 9 electrode. You know, CSST is one electrode during the 10 testing, and there is some Romex wiring that's the other 11 electrode in the testing, and that's the gap between them. 12 That's the business between those two during testing.</p> <p>13 Q. So if we look at that -- and strike that. Why is 14 that important? Why is that gap important to your opinions?</p> <p>15 A. Well, when we -- we found out that it was important. 16 We didn't really know that it would be important when we set 17 up the testing, you know, that's --</p> <p>18 Q. Why is it something that you included in this chart? 19 Why did you include gap inches in this chart?</p> <p>20 A. Well, that's what I'm trying to say is that when we 21 were designing the test and setting the test up, we decided 22 that, as one should, we should vary certain test conditions to 23 see what effect that might have upon the results.</p> <p>24 Q. Okay.</p> <p>25 A. That's sort of implicit in the scientific method as</p>	<p style="text-align: right;">80</p> <p>1 or anyone else with Integrity measure the distance between the 2 hole in the CSST and anything else in the attic at all?</p> <p>3 A. Clearly I did not because I was not there, and I 4 don't know the answer to your second question.</p> <p>5 Q. Do you know whether the hole in the CSST was even 6 facing the coax cable?</p> <p>7 A. Yes. My understanding is that it was.</p> <p>8 Q. Your understanding --</p> <p>9 A. I think that was facing downward, I believe.</p> <p>10 Q. And that is based upon your review of pictures?</p> <p>11 A. No. I think there's some language like that in the 12 report, that it was just lying there on -- well, then there is 13 a -- there's a marked up picture -- and by "marked up," I mean 14 with arrows and that kind of thing in the report somewhere 15 that says the coax or the CSST was on top of the coax, and the 16 hole was maybe some certain angle coming out the bottom.</p> <p>17 Q. Okay. But sitting here today, you don't know how 18 far away the coax cable was from the hole in the CSST; 19 correct?</p> <p>20 A. I do not.</p> <p>21 Q. Okay. I think -- oh, okay. So we have been calling 22 this the 200 Series testing in here. It says 200 Series 23 testing here. Just so the record is clear, there appear to be 24 a bunch of CSST pictures here. And you have never measured or 25 you don't know the size of any of those holes; correct?</p>



<p style="text-align: right;">81</p> <p>1 A. I don't.</p> <p>2 Q. Okay. In this paper, you have a hypothesis that the</p> <p>3 following sequence occurs, and I want to go to eight. Can you</p> <p>4 read that, please?</p> <p>5 A. Yes. Well, actually, I can't. You will have to</p> <p>6 blow it up a tiny bit in size.</p> <p>7 Q. That's too big. Let's see. Let's try it this way.</p> <p>8 A. Well, there's no way to get it smaller, is there?</p> <p>9 Q. Well, I'm going to try to get it all on the same</p> <p>10 page, but let's try that. Is that better? Can you do that?</p> <p>11 A. Yeah, the problem is I am -- there is a -- on my</p> <p>12 screen, there is a block of four -- there's a column with all</p> <p>13 of the photographs in it; mine, yours, Christine's, and Bill's</p> <p>14 placeholder. And that block is on top of the end of the text</p> <p>15 and each one of the sentences making up that paragraph.</p> <p>16 Q. All right. I'll go through it with you, then.</p> <p>17 A. Okay.</p> <p>18 Q. You say in this paper, "If the flaming gas jet then</p> <p>19 impinges upon a nearby object - i.e., if the flow of the gas</p> <p>20 jet "stagnates" - sustained burning may result." Right?</p> <p>21 A. Correct.</p> <p>22 Q. And do you still agree with that?</p> <p>23 A. I do.</p> <p>24 Q. You then say, "Flow stagnation reduces the speed of</p> <p>25 the jet and also creates turbulence, increasing the mixing of</p>	<p style="text-align: right;">83</p> <p>1 just remembered that it's lower for propane, and I can't</p> <p>2 remember the number. I mean, it's -- to the best of my</p> <p>3 recollection, it's maybe 160, 170 feet per second, something</p> <p>4 like that.</p> <p>5 Q. Okay. The next sentence says, "This is</p> <p>6 significantly faster than the flame propagation speed of a</p> <p>7 combustible mixture of natural gas and air, which is around</p> <p>8 .60 meters per second (2 feet per second)." Right?</p> <p>9 A. That's right. Once again, it's natural gas.</p> <p>10 Q. Okay. And so --</p> <p>11 A. Though propane is a bit faster in that case.</p> <p>12 Q. Okay. Do you know what the flame propagation</p> <p>13 speed --</p> <p>14 A. Hum?</p> <p>15 Q. Do you know what the flame propagation speed of a</p> <p>16 combustible mixture of propane in air is?</p> <p>17 A. Yeah. That's what I just said. I don't remember</p> <p>18 the exact number. It's a little better than 2 feet per</p> <p>19 second.</p> <p>20 Q. You would agree with me that the theoretical speed</p> <p>21 of a propane gas jet exceeds the flame propagation rate of a</p> <p>22 natural -- of a propane air mixture; correct?</p> <p>23 A. You're saying the jet speed exceeds the flame</p> <p>24 propagation speed?</p> <p>25 Q. For propane; correct?</p>
<p style="text-align: right;">82</p> <p>1 the gas with air." Do you still agree with that?</p> <p>2 A. I do.</p> <p>3 Q. Okay. You say, "However, in the absence of an</p> <p>4 object to slow the gas jet, the flame will likely blow out.</p> <p>5 The theoretical speed of the gas jet exceeds the flame</p> <p>6 propagation rate of a natural gas/air mixture." Is that</p> <p>7 correct?</p> <p>8 A. That's correct.</p> <p>9 Q. And you still agree with that opinion?</p> <p>10 A. I do.</p> <p>11 Q. Okay. And then you have a note here which says,</p> <p>12 "The theoretical speed of a natural gas jet, exiting a perfect</p> <p>13 convergent nozzle, driven by typical residential gas pressure</p> <p>14 of 1,740 pascals (7 inches or inches of water column) is</p> <p>15 approximately 70 meters per second (230 feet per second)." Do</p> <p>16 you still stand by that calculation?</p> <p>17 A. Yeah, although I should point out those are the</p> <p>18 numbers for that 7 inches of water column and that 230 feet</p> <p>19 per second are the numbers for natural gas, not for propane.</p> <p>20 Q. Okay. Do you know what the theoretical speed of</p> <p>21 propane is?</p> <p>22 A. You know, I don't. I know that it's -- I have done</p> <p>23 the calculation. It's just been a while. For one thing, the</p> <p>24 pressure will be 11 inches of water column for the propane.</p> <p>25 And as far as the speed of the jet, the 230 feet per second, I</p>	<p style="text-align: right;">84</p> <p>1 A. It does.</p> <p>2 Q. Okay. So the last sentence of that paragraph 8</p> <p>3 says, "The flow velocity out of the initially small and</p> <p>4 somewhat irregular hole in the plastic CSST jacket can be</p> <p>5 expected to be much lower than the 'perfect jet' speed.</p> <p>6 (However, based on our test observations, sufficient speed</p> <p>7 often remains to cause flame blowout.)" Correct?</p> <p>8 A. Yes, sir.</p> <p>9 Q. And you stand by that opinion; right?</p> <p>10 A. I guess if I were to change anything, I'd say</p> <p>11 sufficient speed sometimes remains to cause flame blowout.</p> <p>12 But my point is that that's the only change, I think.</p> <p>13 Q. Okay. And as you have said, this paragraph, as</p> <p>14 you've written it, applies to natural gas, but it also applies</p> <p>15 to propane; correct?</p> <p>16 A. It does. With adjustments here and there, it</p> <p>17 applies to propane.</p> <p>18 Q. Okay. So, in paragraph 9 of your paper, it says,</p> <p>19 "In the stagnation/sustained-flame case, if the object upon</p> <p>20 which the burning gas stagnates is combustible, it also</p> <p>21 catches fire. In effect, the object becomes a 'flame holder,'</p> <p>22 acting in some respects like the combustor section of a jet</p> <p>23 engine. Also, even if the impinged-upon object isn't</p> <p>24 combustible, it can serve as a flame holder once heated by the</p> <p>25 flame." Do you see that?</p>

<p style="text-align: right;">85</p> <p>1 A. I do.</p> <p>2 Q. Okay. And you stand by those opinions?</p> <p>3 A. I do.</p> <p>4 Q. Do you know what -- well, strike that. Did you ever</p> <p>5 test what the maximum distance between the jet and the object</p> <p>6 would have to be in a propane case in order for the stagnation</p> <p>7 you described to occur?</p> <p>8 A. The maximum -- please say that again, Adam.</p> <p>9 Q. Sure. So we looked earlier at your test results</p> <p>10 where -- where is it? -- Figure 5 in your report. Here we</p> <p>11 go -- and the gap inches that you tested were 0.125 to .75.</p> <p>12 So, the maximum distance that you tested was three quarters of</p> <p>13 an inch; correct?</p> <p>14 A. Yes.</p> <p>15 Q. Okay. Did you ever determine -- well, strike that</p> <p>16 did you ever conduct any tests where the gap inches were more</p> <p>17 than an inch?</p> <p>18 A. Yes, to some extent. I remember some testing that</p> <p>19 we performed. I believe it was with propane. And as I</p> <p>20 recall, there was nothing for the gas jet to impinge upon, and</p> <p>21 yet it ignited, a sustained flame resulted, and it just sat</p> <p>22 there burning with the flame standing a good ways away, or a</p> <p>23 good length, you know, several inches, I believe, from the</p> <p>24 hole in the CSST and didn't blow out. And, you know, a lot of</p> <p>25 things would indicate that it should have blown out, but it</p>	<p style="text-align: right;">87</p> <p>1 right?</p> <p>2 A. Yes.</p> <p>3 Q. Okay. So did you ever do any -- did you ever make</p> <p>4 any attempt to study the distances beyond those that are</p> <p>5 indicated in here?</p> <p>6 A. No. We had the short and the long for the testing,</p> <p>7 and that's all that went into this paper.</p> <p>8 Q. Are you okay? Do you want to take a short break?</p> <p>9 It's been a little while.</p> <p>10 A. I choked, sorry. I have been nibbling on little</p> <p>11 candies all morning because I have a blood sugar problem if I</p> <p>12 don't, and unfortunately managed to get choked with one.</p> <p>13 Q. Do you want to take five minutes?</p> <p>14 A. I would love a 5- or 10-minute break.</p> <p>15 Q. You would? Okay. Let's take 10 minutes.</p> <p>16 A. Yeah.</p> <p>17 VIDEOGRAPHER: Off the record at 11:38 a.m.</p> <p>18</p> <p>19 (Off record, 11:38 a.m. to 11:50 a.m.)</p> <p>20</p> <p>21 VIDEOGRAPHER: Back on the record at 11:50 a.m.</p> <p>22 Q. (By Mr. Masin) Welcome back, sir.</p> <p>23 A. Hi.</p> <p>24 Q. Anything about your testimony thus far you wish to</p> <p>25 change?</p>
<p style="text-align: right;">86</p> <p>1 didn't.</p> <p>2 Q. What test are you referring to? Where is that? Is</p> <p>3 that published somewhere?</p> <p>4 A. Well, it was a CSST job, job assignment, and I think</p> <p>5 that it was at 2 psi, actually, and still didn't blow out,</p> <p>6 despite the high pressure.</p> <p>7 Q. If I wanted to see -- well, strike that.</p> <p>8 A. If you wanted to see --</p> <p>9 Q. If I wanted to see that documentation of that</p> <p>10 testing, where would I look for it?</p> <p>11 A. I'm just not sure right now. I'm relying on -- it's</p> <p>12 not something that I really thought about as something that I</p> <p>13 relied on for my opinions in this case. It was done on a</p> <p>14 different case, and it just didn't occur to me. It's not</p> <p>15 something -- there's no doubt if I sat down and talked with</p> <p>16 Mark and Kelly, we could figure out where that is, what job</p> <p>17 file that was associated with.</p> <p>18 Q. So in your testing that you did do, when you were</p> <p>19 using 0.125 gap inches, sometimes the flame blew out; right?</p> <p>20 A. I did it with the eighth-inch gap.</p> <p>21 Q. Well, look at Number 1.</p> <p>22 A. Sure did. Look at Number 21.</p> <p>23 Q. Or look at Number 21; right?</p> <p>24 A. Oh, yeah, yeah, uh-huh.</p> <p>25 Q. And sometimes it blew out when you were using 0.75;</p>	<p style="text-align: right;">88</p> <p>1 A. No. I believe I'm good.</p> <p>2 Q. Okay. Hopefully, we don't have too much longer, so</p> <p>3 I don't know that we will necessarily need to take another</p> <p>4 break --</p> <p>5 A. Okay.</p> <p>6 Q. -- but if you feel like you need to, or if your</p> <p>7 throat is acting up or anything, let us know. Okay?</p> <p>8 A. Thank you very much. I have a pulmonary condition</p> <p>9 that has me prone to coughing, fits of coughing if I get</p> <p>10 choked, and I appreciate your willingness to work with me with</p> <p>11 regard to that.</p> <p>12 Q. Absolutely. Do not hesitate if you need a break.</p> <p>13 Okay?</p> <p>14 A. Thanks.</p> <p>15 Q. All right. Before we broke, we were discussing the</p> <p>16 perforation in the CSST. Do you know how far away from the</p> <p>17 hole the next nearest object was?</p> <p>18 A. In the case of the Diel residence?</p> <p>19 Q. Yeah. In the Diel residence, if you were to measure</p> <p>20 from the hole in the CSST in a straight line, do you know how</p> <p>21 far away the next nearest object was?</p> <p>22 A. No. As I say, there was a bundle of coax that the</p> <p>23 CSST was, to my understanding, lying on, you know, just by</p> <p>24 installation. And so the hole could have been directly in</p> <p>25 contact. It could have been an eighth of an inch away. It</p>

<p style="text-align: right;">89</p> <p>1 could have been a quarter of an inch away. I don't know. But</p> <p>2 the words "in contact" imply that to me.</p> <p>3 Q. Do you know whether the hole was even facing the</p> <p>4 coax cable?</p> <p>5 A. That's my recollection from what I read was that it</p> <p>6 was, yes, facing it, and that -- as I say, I have this memory</p> <p>7 of seeing a -- not a diagram, but a photograph that was marked</p> <p>8 up, you know, with arrows and word bubbles and that kind of</p> <p>9 thing that showed that arrangement. I'm almost certain that's</p> <p>10 somewhere in our report.</p> <p>11 Q. And the only reference that you would have to that,</p> <p>12 it would be photographs because you were not at the scene;</p> <p>13 right?</p> <p>14 A. That's correct. I was not at the scene.</p> <p>15 Q. Okay. Let's put this up again. This was Exhibit 5</p> <p>16 I believe, right? We were looking at Exhibit 5, which is</p> <p>17 your -- the 2014 paper. Do you see that?</p> <p>18 A. That's right.</p> <p>19 Q. Okay. And if you go to -- what page is this? If</p> <p>20 you go to page 2 at the bottom --</p> <p>21 A. Okay.</p> <p>22 Q. -- you say that, "About 95 percent of lightning</p> <p>23 strikes are from negative polarity. The bottom of the cloud</p> <p>24 is negative with respect to the earth. So electrons flow from</p> <p>25 cloud to Earth during the strike." Right?</p>	<p style="text-align: right;">91</p> <p>1 Q. Okay.</p> <p>2 A. Just the opinion he issued in this case?</p> <p>3 Q. Right. You haven't read Mr. Morse's report in this</p> <p>4 case; correct?</p> <p>5 A. I have not, and that's what you were referring to</p> <p>6 there?</p> <p>7 Q. To the extent that he -- his report offers an</p> <p>8 opinion regarding the impact of the fact that this was a</p> <p>9 positive strike on the Diel's home, you don't know what his</p> <p>10 opinion is, and you don't have any criticism of it because you</p> <p>11 don't you know what it is; right?</p> <p>12 A. I do not have any criticism at this time. I</p> <p>13 certainly will be reading it.</p> <p>14 Q. The test that you did in the paper, the 2014 paper,</p> <p>15 were negative polarity tests; correct?</p> <p>16 A. Yes.</p> <p>17 Q. Have you ever tested positive polarity?</p> <p>18 A. I don't think so. It's possible we have run a few</p> <p>19 tests at that opposite polarity, but I'm just not sure. As I</p> <p>20 say, it's nothing that we would anticipate would make any kind</p> <p>21 of a big difference one way or another.</p> <p>22 Q. During your work on this case, did you become aware</p> <p>23 as to whether or not the Diel's home was demolished?</p> <p>24 A. I have no knowledge of that. Whether it was or</p> <p>25 wasn't, I have no idea.</p>
<p style="text-align: right;">90</p> <p>1 A. That's right.</p> <p>2 Q. Okay. And then you say, "About 5 to 10 percent of</p> <p>3 lightning strikes are of positive polarity." Right?</p> <p>4 A. That's correct.</p> <p>5 Q. And you say that they -- "The positive polarity</p> <p>6 lightning strikes tend to be more powerful, more charge</p> <p>7 transfer, more current than negative strikes." Right?</p> <p>8 A. That also is correct.</p> <p>9 Q. Okay. And then you say, "Since negative strikes are</p> <p>10 the most common, we performed our testing with the CSST at</p> <p>11 negative polarity with respect to the discharge electrode."</p> <p>12 Do you see that?</p> <p>13 A. Yes.</p> <p>14 Q. Do you know whether the lightning strike in the</p> <p>15 Diel's home was a positive or negative strike?</p> <p>16 A. I don't recall. It's -- I believe that's specified</p> <p>17 in the STRIKE report, but I don't recall. There's no reason</p> <p>18 to believe that the polarity of the strike causes any</p> <p>19 significant difference in the behavior of the arcs or ignition</p> <p>20 or anything like that. And so that's why, as I say, I don't</p> <p>21 even recall in this case.</p> <p>22 Q. Okay. And because you haven't read Mr. Morse's</p> <p>23 opinion, you would not be aware of his opinion on that</p> <p>24 subject; correct?</p> <p>25 A. Oh, gosh, I guess not.</p>	<p style="text-align: right;">92</p> <p>1 Q. And I take it that you're not giving an opinion in</p> <p>2 this case one way or another that the home had to be</p> <p>3 demolished; correct?</p> <p>4 A. No, that's correct.</p> <p>5 Q. Just bear with me. I'm just going over my notes.</p> <p>6 A. Oh, okay. I realize I'm not here to ask questions,</p> <p>7 but has Mr. Morse been deposed yet on this file?</p> <p>8 Q. No, he has not. Do you -- strike that. Did you do</p> <p>9 any work on this case that relates to arcing events that may</p> <p>10 have occurred in other areas of the attic?</p> <p>11 A. No, no, I have not.</p> <p>12 Q. Okay. So to the extent that there were other arcing</p> <p>13 events in the attic, you have no opinions about those;</p> <p>14 correct?</p> <p>15 A. I do not.</p> <p>16 Q. Okay. As part of your work in this case, did you</p> <p>17 consider a hypothesis that an already existing fire ignited</p> <p>18 propane escaping the CSST?</p> <p>19 A. That depends on what you mean by "consider." That's</p> <p>20 not a notion that I believe has any merit. So if I considered</p> <p>21 it, it wasn't for long, considering the propensity of propane</p> <p>22 to ignite and to sustain a flame after it's been released by</p> <p>23 an arc, ignited by the arc. There is no reason to think that</p> <p>24 you have an arc hole and no ignition, no sustained flame</p> <p>25 releasing propane and then finally that propane gets ignited</p>

<p>93</p> <p>1 by some other arc hole. I just don't think that line of 2 reasoning is meritorious.</p> <p>3 Q. Okay. But you -- as part of your opinions in this 4 case, you did not rule out other possible causes of the fire; 5 correct? You focused only on the CSST; right?</p> <p>6 A. Well, that would be the kind of thing that I would 7 rule out. As I say, it would almost be incidental in my 8 analysis. That said, though, to the extent that there are 9 other arc events in the attic and all that kind of thing, 10 those were not part of my opinions or things that I intend to 11 offer as part of my testimony; that was more, I guess, 12 Mr. Ozment and Kelly, and I guess Mark was also at the scene. 13 They -- they dealt with any of these other arcing events and 14 such, not me.</p> <p>15 Q. We have now gone over, I think, all of the opinions 16 that are listed here in your report, 1 to 13.</p> <p>17 A. Okay.</p> <p>18 Q. Are there any other opinions that you would intend 19 to give at trial affirmatively without being asked a question 20 about it that we have not discussed today?</p> <p>21 A. None of which I'm aware at this time. You have 22 brought up Mr. Morse's report, which now I shall read. And, 23 of course, I'll probably read the rest of the reports, too. 24 It's possible I'll find things that I disagree with in those 25 documents. And if so, I would talk to Mr. Cathcart and tell</p>	<p>95</p> <p>1 A. Correct. Frankly, it's possible that he has given 2 them to me to read and that I didn't think to.</p> <p>3 Q. Okay. Subject to any other questions that 4 Mr. Cathcart has, then I'm done with my examination, and I'll 5 thank you for your time.</p> <p>6 A. Oh, okay. Thank you, Adam. I appreciate that. You 7 were a good deponnee.</p> <p>8 MR. CATHCART: No questions here.</p> <p>9 Q. (By Mr. Masin) Okay. Are you reading and signing? 10 I don't think we covered that?</p> <p>11 A. Oh, yes, I will be.</p> <p>12 Q. Yeah, okay. Then I have nothing further for you, 13 sir, today. Thanks so much for your time, and I hope you feel 14 better.</p> <p>15 A. Thank you so much.</p> <p>16 VIDEOGRAPHER: Off the record at 12:06 p.m.</p> <p>17</p> <p>18 (Deposition concluded, 12:06 p.m.)</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>
<p>94</p> <p>1 him about those, and perhaps encourage him to have me testify 2 about them, but --</p> <p>3 Q. Let me ask you about that. You have been involved 4 in a number of CSST cases in the past; correct?</p> <p>5 A. I have.</p> <p>6 Q. And you're aware that Omega Flex has experts 7 retained in those cases; correct?</p> <p>8 A. Sure.</p> <p>9 Q. You're aware that Omega Flex issues expert reports 10 in those cases; right?</p> <p>11 A. Yes.</p> <p>12 Q. Have you read those reports in the past?</p> <p>13 A. Probably not every one. I have read a number of 14 Omega Flex's expert reports. They are usually -- the ones I 15 recall they were all employees of Exponent, the consulting 16 firm. And I have read, I believe, Mr. Morse's reports in the 17 past. I have certainly read Gabe Kaitomer's (phonetic) 18 reports. I'm not quite sure why I wound up not reviewing 19 Morse's report in this case.</p> <p>20 Q. Well, it's certainly not a surprise to you that 21 Omega Flex has issued expert reports in this case; correct?</p> <p>22 A. Correct.</p> <p>23 Q. And if you had wanted to read those reports before 24 your deposition today, you could have asked Mr. Cathcart, and 25 I'm sure he would have given them to you to read; right?</p>	<p>96</p> <p>1 CERTIFICATE OF COURT REPORTER</p> <p>2</p> <p>3 I, Christine E. Borrelli, Registered Merit Reporter 4 and Certified Court Reporter, a Notary Public, do certify that 5 the deposition of JOHNIE P. SPRUIELL, P.E., taken on Friday, 6 May 12, 2023, was stenographically reported by me; that the 7 witness provided satisfactory evidence of identification, 8 before being sworn by me; that the transcript produced by me 9 is a true and accurate record of the proceedings; that I am 10 neither counsel for, related to, nor employed by any of the 11 parties to the above action; and further that I am not a 12 relative or employee of any attorney or counsel employed by 13 the parties thereto, nor financially or otherwise interested 14 in the outcome of the action.</p> <p>15</p> <p>16 </p> <p>17</p> <p>18 Christine E. Borrelli 19 Stenographic Reporter</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>

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1 SIGNATURE PAGE/ERRATA SHEET

2

WITNESS: JOHNIE P. SPRUIELL, P.E.

3

CASE: OKLAHOMA FARM BUREAU MUTUAL INSURANCE COMPANY AS  
SUBROGEE OF MICHAEL DIEI vs. OMEGA FLEX, INC.

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6 PAGE LINE CHANGE OR CORRECTION AND REASON

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17 I, JOHNIE P. SPRUIELL, P.E., have read the  
18 transcript of my deposition taken Friday, May 12, 2023, except  
19 for any corrections or changes noted above, I hereby subscribe  
20 to the transcript as an accurate record of the statements made  
21 by me.

22 Signed under the pains and penalties of perjury.

23

24 \_\_\_\_\_ DATE: \_\_\_\_\_

Johnie P. Spruiell, P.E.

25

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